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ABSTRACT

This book presents a holistic approach to fitness, opens channels of information, and identifies useful resources and references. After an introduction to the subject of health related fitness, the book presents 12 chapters answering the following questions: (1) Why Not Be Fit? (2) What Is Physical Fitness? (3) Why Participate in Fitness? (4) What Is Aerobic Exercise? (5) What Are Your Aerobic Workout Alternatives? (6) Who Should Participate and What Pre-exercise Steps Should They Take? (7) How Do You Begin an Exercise Program? (8) How Do You Select, Evaluate, and Get the Most from Your Fitness Class? (9) How Do You Work Out on Your Own? (10) What Are the Basics of a Proper Diet? (11) How Do You Lose Fat Weight? and (12) How Do You Prevent Health Problems? A book bibliography, additional book resources, glossary, index, 14 tables, 2 charts, and 2 worksheets are included. Appendices include information about professional associations offering teacher certification programs, and sources of referenced magazines, abstracts of reference books and recommended magazines, a list of newsletters, and a section on bolstering personal appearance. (LL)

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FITNESS UNFOLDING

How to Begin and Maintain A Quality, Healthy Lifestyle.

Tips, Guidelines, and Resources

Sydney Meredith

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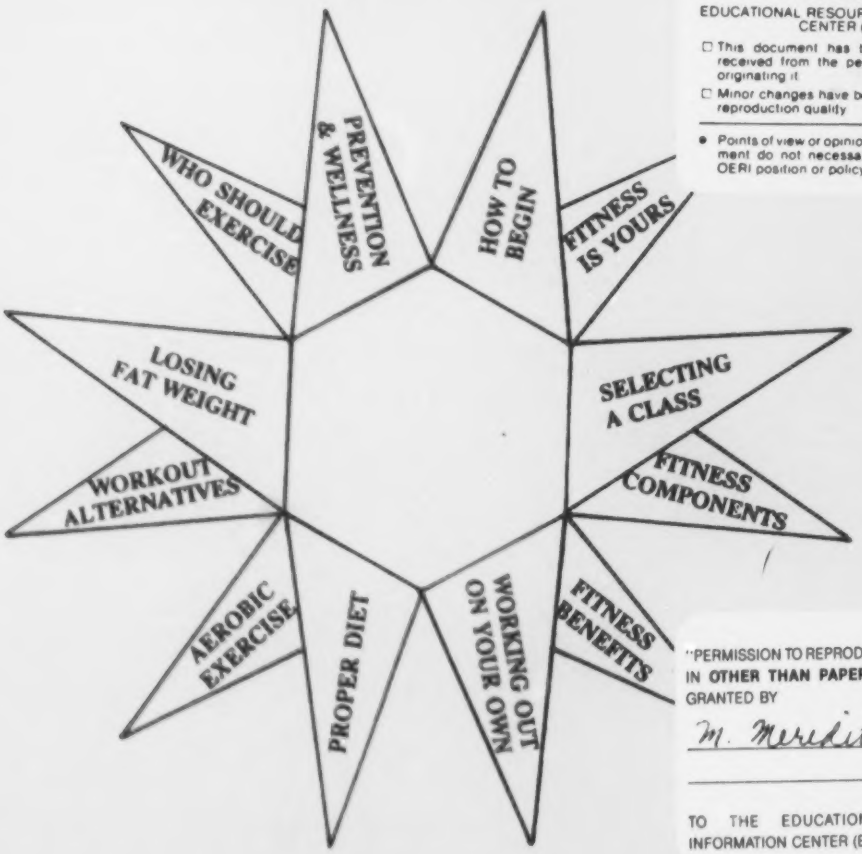

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FITNESS UNFOLDING:

How to Begin and Maintain A Quality, Healthy Lifestyle.

Tips, Guidelines, Resources, and References.

Sydney Meredith

Symmetry Press

FITNESS UNFOLDING: How to Begin and Maintain A Quality, Healthy Lifestyle. Tips, Guidelines, Resources, and References.
by Sydney Meredith

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Note to the Reader:

This book is intended only as an informative guide for those wishing to know more about exercise, nutrition and prevention. It is not intended to replace advice given to you by your physician. Information in this book is general and is offered with no guarantees on the part of the author or Symmetry Press. The author and publisher disclaim all liability in connection with the use of this book.

This book is dedicated to Mark, who never disappointed me or let me down, and who taught me that a book has a wealth of information for a small price; to my dear parents who were nutritionally cognizant long before it was fashionable; and to April, who maintains her loving nature despite hardships most of us never experience.

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I wish to thank Laura Lass, Diana McWilliams, and Terry Ranten for their careful review of this book. Their recommendations are integrated herein.

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PREFACE

PREFACE

FITNESS KNOWLEDGE AND RESEARCH

Despite the increase in fitness and wellness research, information, and centers, the right information is not reaching all of the fitness instructors, many of the class participants, and the general public.

Many people--even in communities with visible fitness programs--hold a variety of misconceptions. For example, I have heard the following at social gatherings: "Exercise is dangerous because it can stress your heart." "I don't want to exercise because I'll get injured." "I'm getting all the exercise I need through my daily activities." "I can eat anything I want because I burn it off through jogging." "I can lose weight through my stretching program." "I'm losing five pounds a week on a grapefruit diet."

Furthermore, fitness teachers sometimes employ faulty practices--such as failing to provide adequate cooldown after an aerobic class. Students often choose a class because they like the teacher, and are typically not aware of whether the teacher applies proper techniques.

During the past 10 plus years, and especially the last few, a substantial amount of information has deluged the public about the benefits and methods of becoming fit. This information has been very enlightening; however, it has also been confusing to the general public. With a variety of opinions expressed on just about every health topic, it sometimes seems that there is just too much fragmented information.

Today extensive research in the fitness area has produced information to help you begin a sensible fitness program. Knowing and applying the synthesized findings of this research allows you to exercise "smarter" rather than "harder." Many exercisers who began a fitness program several years ago, in their zeal, pursued an extreme program, starting out at an intense level, working out too frequently, and perhaps for longer durations than they needed to or should have. For many, it was too much too soon; they sometimes burned out or became injured and eventually dropped out of fitness. Some who became injured worked through the injury, but were slowed down considerably. Recent research confirms that it is better to gradually work into fitness at a subdued and safe pace when you are sedentary and "deconditioned." Importance is placed on preparing and training the cardiovascular system and conditioning the muscles, tendons, ligaments, and joints to make them more resilient before engaging in more difficult aerobic programs. Research shows that, when training and conditioning, it is essential to progress in fitness gradually, increasing the intensity, frequency, and duration at a safe level (and never increasing all three at one time).

A distillation of knowledge and research for the individual seeking a healthy, fit lifestyle is needed--in handy reference book form--to do the following:

- o correct misconceptions about fitness and fitness programs.
- o provide guidelines on proper instructional techniques and sequences.
- o clarify the different kinds of programs that are available, and offer selection criteria.
- o present basic information for getting started in fitness and a healthy lifestyle, pacing development of conditioning, and preventing injury.

Fitness Unfolding offers clear, sensible, simple information for you, not matter your age or condition. It's never too early or too late to begin a lifetime fitness program.

WHO THIS BOOK IS FOR

Fitness Unfolding is intended for two groups: (1) those among the estimated 60% to 80% or more of our population who are not now exercising at the appropriate intensity, duration, and frequency to promote their fitness--but who have aspirations to exercise in a safe and effective way, and (2) those among the estimated 20% who are practicing some type of fitness--but would like to know, learn, and do more in the way of fitness. It is written for those among the vast majority who are not eating the "right stuff" (low fat, less sugar and sodium, low cholesterol, and high fiber) but who feel they should start. It is written for the person interested in improving their health and living a better life, and who may need some encouragement. If you are among this population, this book is for YOU.

BASIS FOR THE BOOK

The book is based upon (1) practical advice which I have learned from being a fitness instructor for the past 12 years; from certification programs, fitness workshops, and extensive studies and reading; (2) technical writing and research information retrieval skills and techniques acquired in 16 years professional experience as a director of an information retrieval center; (3) today's up-to-date knowledge and research which indicates that appropriate exercise, sound diet, proper weight, and low-stress lifestyle promote much healthier people; and (4) my belief that fitness "unfolds"--it is progressive and can improve over a lifetime, rather than a fixed state of fitness one reaches (see pp. 3-6).

The book emphasizes that inactivity is a risk factor for heart disease and contributes to poor health. Dr. James Rippe stated that "avoiding all exercise increases your risk about as much as smoking one package of cigarettes a day." (American Health, June, 1988, p. 43).

ABOUT THE AUTHOR

My passion for writing this book stems from my professional experience in writing and information retrieval, my fitness teaching and training, and my personal love for fitness.

For 16 years I worked at a fairly sedentary job where I began as a technical writer for a social science information resource and research retrieval center. By the time the Center moved to a different state, I was at the director level. During these years I learned and practiced research and writing skills and techniques. In addition to managing, I wrote articles, technical manuals, and proposals. Altogether, I learned the skills necessary to write this book.

My knowledge and enthusiasm for fitness began when I was working at the retrieval center. When I was 38 I began skiing, and two years later decided to take a ski fitness conditioning class. I enjoyed the class so much I began attending year-round general fitness classes twice a week, then three times, and finally five days.

I took to it so well that I was asked to teach fitness and became an instructor over 12 years ago. I studied fitness, attended workshops, read professional literature, and became interested in related aspects, such as nutrition.

I became a certified instructor through the International Dance Exercise Association

(IDEA, 1986) and the Aerobics and Fitness Association of America (AFAA, 1987), and took university courses, professional workshops, and read numerous books and articles.

I became aware that an informative reference book was needed to correct misconceptions about fitness; alert the public about exercise guidelines and research that has been developed by various professional associations; identify the different fitness programs that are widely available today; present basic information on how to begin an exercise program and on how to lead a healthy lifestyle that helps prevent illness and promote a better quality of life.

During my 12-plus years of teaching, students have asked many questions about how to lead a healthy life. I wanted to write a book to address those concerns as well as refer others to the variety of wonderful resources on fitness available today. I also wanted to share and emphasize my belief that to change your lifestyle requires a life-long developmental process, hence the title Fitness Unfolding. I tell my students that they have the rest of their lives to improve in fitness and to take one day at a time and enjoy.

Life balance is also a desire of mine that I want to share with others. Physical fitness is one part of a healthy lifestyle; it needs to be balanced with the mental, social, and spiritual aspects.

My lifestyle is a testimony to the evolution process of fitness. As mentioned above, I began taking exercise classes when I was 38. The conditioning class included running, so at 40-plus years I included running in my fitness program. At 47 I added ballet twice a week to my physical routine, and at 50 a thrice weekly unique class combining yoga, gymnastics, strength work, and dance routines. At 54 I can do splits, backbends, and other physical feats. My fitness level improved gradually to a rate I never dreamed possible.

There is a wellness emphasis in my life. I feel good, have a healthy body, lead a healthy lifestyle, and have established good, emotional relationships with others. I keep learning and improving. Fitness is truly a personal unfolding.

PHILOSOPHY OF FITNESS

I am interested in helping others become fit so they can discover the tremendous benefits and positive elements in lifestyle that have changed forever my life and the lives of so many others.

My realistic, moderate, and whole-system philosophy toward fitness emphasizes wellness for the years ahead...whatever your age. Exercise, nutrition, maintaining proper weight, and stress reduction and control are foundations for a fitness program. For the apparently healthy but sedentary person, my approach is one of moderation in all of the areas. (If you have a chronic disease or are obese, your physician will insist on a stricter program). From my teaching experience, I know that most who begin exercising try to make up for lost time by engaging in too much exercise when they begin; they exercise with too much intensity and too frequently. They are highly motivated (which is good) but fail to realize that it takes time to properly condition the body. Students think that if "some" exercise is good for you, "more" is better.

A moderate approach means that you take a life-long path to fitness and enjoy the process. For example, when you begin a fitness program, it might be a pre-conditioning program, or a beginning level class, or a walking program. Instead of exercising seven days a week at high intensity, you might start exer-

cising three days in moderation. These moderate beginnings prevent injuries which lead to dropout and/or burnout. You progress at a safe, effective pace. To lose weight, you eat three nutritious meals a day following principles presented in this book. Your fitness level needs to grow; it cannot be forced. It comes about gradually through the practice of good health.

The moderate approach gives your body time to adjust to the changes and allows for physiological and psychological growth along the way, so that you learn about your body and how to listen to it. This developmental, gradual process is what I call "fitness unfolding."

ABOUT THE BOOK

This book will gently and gradually "unfold" fitness data and information. It will open, spread out, and explain fitness--putting the information out for you to see, absorb, and practice. As you participate in fitness you will keep learning and understanding more about it as you go along. The book is written with fitness unfolding in mind in regard to presenting basic information which is followed by more involved information. For example, in Chapter 12, p. 168, under "healthy habits to follow to handle stress," I've listed "have or make your job satisfying." Then, books suggesting how to pursue work that you love are referenced. The book includes so much information that it is difficult to absorb all of it at once, so keep and use it as a reference.

BOOK FORMAT AND CONTENTS

The book alternates between reference and textual material. It intersperses references, additional resources, guidelines, and tips throughout. To help you plan your own fitness program, textual material presents information you need to know. Reference and additional resources direct your attention to a wealth of sources of information to draw upon (books, articles, booklets, newsletters, videos, posters). Guidelines (developed by major fitness professional associations or other knowledgeable fitness professionals) provide recommendations for exercising safely and effectively, eating nutritionally, and losing weight. Tips uncover unusual information.

Dozens of timely and significant tips, guidelines, and references are included. For example, the reader is: (1) tipped that if one of your fitness goals is to lose weight, swimming may not be the best activity; (2) given guidelines for walking at an aerobic pace for fitness; and (3) provided with references to various organizations--such as the President's Council on Physical Fitness and Sports, the American Society of Bariatric Physicians (specialists in treating the overweight), and Prevention's Walking Club---and to various fitness articles, booklets, and newsletters containing useful information. In layman's terms the book includes suggestions, recommendations, and guidelines from leading fitness organizations such as the American College of Sports Medicine, International Dance Exercise Association, and American Fitness and Aerobics Association.

The Introduction is followed by 12 chapters and appendices. The Introduction discusses the conceptual meaning of "fitness unfolding," emphasizing that fitness evolves gradually, both within the society and in the individual. Chapter 1 points out that although fitness is readily available, many people offer a variety of reasons and excuses why they don't exercise. Chapter 2 describes the five components of fitness--cardiovascular fitness, muscle strength and endurance, lean weight, and flexibility. Chapter 3 identifies risks of being sedentary and covers 13 major benefits of exercise. Chapter 4 defines aerobic exercise,

explains the fitness formula, and discusses other important factors related to aerobic exercise. Chapter 5 outlines various exercise options. Chapter 6 focuses on medical considerations prior to starting an exercise program. Chapter 7 tells how to begin an exercise program. It includes information on setting goals, choosing an activity, training and progressing in a safe and effective manner, and preventing exercise injuries. Chapter 8 gives advice for selecting, evaluating, and getting the most from a fitness class. Chapter 9 offers information for developing and planning a personalized workout. Chapter 10, the longest chapter, deals with nutrition, emphasizing that proper diet and exercise are partners in maintaining good health. Chapter 11, on losing weight, lists weight loss resources and covers principles and formulas for estimating the fat weight you need to lose to reach your ideal weight. Chapter 12 (in my view the most important chapter) takes a wholistic look at health, emphasizing that a balanced life with good physical, mental, social, and emotional health habits all work together synergistically to promote wellness. The chapter begins by stating that prevention is more effective in the long run than are treatment and cure of illness, then discusses heavy costs of poor health practices both in terms of death rates and in U.S. dollars; explains the meaning of high level wellness; and identifies high level wellness health habits. The last part of this chapter focuses on other aspects of wellness--in the environment, home, at work, and traveling.

Book references are given following Chapter 12. Additional book resources are listed. Magazine references and journal and newsletter citations are integrated in the text material.

Tables and worksheets are included in various chapters. Appendices include: addresses of magazines referenced in the book, descriptions of four teacher certifying professional associations, 20 descriptive abstracts of selected fitness books, and information on three general magazines and newsletters.

After reading this book, you will understand the basic components of fitness (including common terminology), what it means to be physically fit, and the many benefits of being fit. Guidelines and information are provided on how to: begin an individual or group fitness program, determine the kind of class to take, choose a class, get the most from a fitness class, work out on your own, and lose weight. Information is also included on nutrition and wellness, and much more in the way of fitness. Applying this information can help you choose a suitable fitness program and know what you are doing and why.

I wrote a book which would:

- o tie fitness all together in one place;
- o briefly explain the basics of fitness in a way that anyone could understand and integrate into their lifestyle;
- o offer suggestions for helping people get into a fitness program.

Several other books available today attempt to guide the average person toward a fitness lifestyle. In my opinion, most of these have not been directed to the person who "thinks" about beginning a program, but is not yet convinced the effort is worth the results. Fitness Unfolding covers the benefits one can expect to get from fitness and shows that these results are, indeed, worth the effort. (The synthesis of extensive and impressive benefits includes relevant information prev-iously scattered throughout the literature.) Other books also do not, I believe, provide beginners with all the information they need to know to start a safe and effective fitness program. Much information we get from the media is in patch-quilt bits and pieces, or is

too technical. My major purpose in writing this book was to enhance people's knowledge about fitness and provide information to help them make informed choices about exercise, nutrition, and a healthy life style.

I present select information that I believe to be most useful to the beginner. If you are like most readers, you don't have time to wade through extensive dialogue to get to the main point. Presenting ideas succinctly, I've used outline form where appropriate to avoid unnecessary words. You can quickly scan major information and, when time allows, read the rest of the information. The book is well-indexed so that it can serve as a reference. As you get more into fitness, and have possible questions, you will be able to quickly look up answers.

If you should become interested in a more in-depth approach, I have included abstracts of relevant books and articles which I consider to be of high quality and which provide more information on aspects of fitness touched upon in this book--to help direct you to more technical and detailed data.

If you are considering becoming fit, I hope that you will read this book and let fitness "unfold" for you. I believe that it will guide you into a total fitness program which will help you become healthier and, therefore, happier. With this information, you may very well reach a wellness level that you never before thought possible!

YOU CAN DO IT!

INTRODUCTION

INTRODUCTION

HOW FITNESS UNFOLDS

Interested in improving your health and quality of life? Then make the right personal choices that promote fitness. And make them over time.

Fitness-wellness is not a "state" one suddenly reaches, but is a progressive, evolutionary state of awareness, enlightenment, and improvement. In this sense, fitness "**unfolds.**" A "fit" person exercises, eats a healthy diet, maintains proper weight, manages stress, and follows other healthy habits. For the typical sedentary person, making all of these changes at once may seem overwhelming, and would be if a gradual "unfolding" or awakening did not occur. Fitness is a step-by-step process, involving the setting of small goals as well as long-term goals. Begin with an appropriate exercise program and other healthy habits will follow. *Unfolding will occur for you as it has for many others.*

Body builder Rachel McLish hints at the unfolding concept when she advises, "The most important thing is to do the best you can in the present. That will usually lead to something else. The human body and psyche tend to strive for more. You always want to top what you just did." (American Fitness, July/August, 1990, p.15.)

A recent Gallop survey investigating why, what, and how people change lifestyles to improve their health indicates that change is about 10 times more likely to be initiated and maintained by people (individuals, themselves) rather than by their doctors, counselors, therapists, or others. Further, people are concerned foremost about their health, and are willing to exercise, eat better, lose weight, and follow other habits to sustain wellness. In regard to the fitness unfolding concept, the survey shows that three-quarters of the changes people make begin on a "day-by-day" basis. (American Health, March 1990, p. 51-53).

Does fitness have to mean deprivation? Do you give up time, energy, and food to be fit? The answer is **No!** In contrast--in the long run-- fitness beautifies and enriches life for you and gives you **more time and energy.** You add to yourself in fitness. This growth promotes a more fulfilling life and results in much pleasure.

Evolving fitness attitudes enhance and expand body, mind, and spirit to help you reach your goals at work and in your personal relationships. You develop attitudes of patience, determination, perseverance, self-confidence, faith, and concentration. These attitudes are then evident in other activities in daily life.

FITNESS UNFOLDS IN SOCIETY AND IN INDIVIDUALS

Good functioning fitness "unfolds" in two ways: in society and in each individual.

First, in its evolutionary development in American society over decades, better fitness knowledge, understanding, and practices have unfolded. In the past, physical fitness has been perceived by most people as physical education activities taught in the schools or sports activities engaged in by athletes. The Young Men's Christian Association (YMCA) was a pioneer organization that offered physical education courses in America in the 1900s. It is one of three professional associations that has played a prominent role, over the last quarter century, in developing special programs and guidelines to evaluate and promote fitness and health. Others are the American Alliance for Health, Physical

Education, Recreation, and Dance (AAHPERD), and American College of Sports Medicine (ACSM). (Ribisl, p.448.) Three more recent organizations which promote sound fitness methods based on research and offer educational programs and certification for fitness instructors are the Aerobics and Fitness Association of America (AFAA), International Dance Exercise Association (IDEA), and Institute for Aerobics Research (IAR).

Toward the mid-20th century a few outstanding men, such as Jack LaLane, ahead of their time regarding fitness, endorsed and promoted physical fitness. Golf and tennis were the popular exercise of the '50s and '60s. From 1956 to the present, the President's Council on Physical Fitness and Sports was appointed to address the concern of unfit American youth. (Ribisl, p.449.)

Exercise did not become popular in a big way, however, until about 20 some years ago when Kenneth Cooper introduced Americans to the concept of "aerobics"--one of the components of fitness. Once the movement caught on, more adults became interested in aerobic exercise and more research was conducted on physical activity in regard to health.

Evidence of the high and continued interest in health and fitness is seen in the promotion of exercise and health through the media (books, magazines, newspaper articles, and exercise and other TV shows), through development of public and commercial health clubs and spas, and through high interest in corporate fitness programs. (Ribisl, p.449.)

After becoming skilled in aerobics, some exercisers realized that other components of fitness--muscular strength and endurance and flexibility--needed to be added to be truly fit. In the '80s, they discovered the role of proper nutrition in good health. To avoid injury and stiffness, and to complement-supplement aerobics and sports, more people engaged in weight training, stretching, and yoga programs. In addition, exercisers became involved in a variety of other aerobic activities such as cycling, mountain biking, cross-country skiing, and swimming. They engaged in cross training, participating in several activities that complement each other and incorporate upper and lower body muscles. Toward the end of the '80s, low-impact activities such as walking became important.

During the early '90s cross training is still popular. Low-impact exercises--walking, swimming, and activities using machines (stair-climbing, treadmills, stationary cycling, and rowing)--are also in vogue. People are exercising outdoors, engaging in rock and mountain climbing, mountain-biking, trail-running, hiking, and water sports. Team sports such as volleyball and basketball are also becoming more popular.

As fitness unfolds, a more balanced, wholistic approach to fitness is revealed. However, exercisers as a group tend to be the 20%-or-less of the population who are enthusiastic about fitness. The other 80% miss out on the marvelous benefits resulting from fitness when practiced in a wholistic way. Among the many benefits are a positive effect on relationships with others; enhancement of health, mind, and spirit; and creation of tremendous energy to accomplish all kinds of goals.

Fitness of the future will involve more unfolding. Experts suggest a number of trends. It is becoming important to include more social contacts in group fitness activities such as hiking and sports activities such as volleyball. Health clubs, recreation centers, and YMCA's will become more of a social center. Exercise will be more varied and individualized. For example, personalized trainers will be more common. Tranquil

forms of exercise that involve the body, mind, and spirit, such as yoga or martial arts, will be more prevalent to help reduce stress, anxiety, and tension filled lives. (Shape, Sept., 1989, p. 100-102, 139-140.)

Research and knowledge in fitness has proliferated, especially in the last 10 years. Numerous reports, articles, and books tell how to promote better health and prevent disease.

The **second** way fitness "unfolds"--which is more important for each individual and for you--is in a person beginning right, then gradually learning more along with practice and regularity, and eventually making fitness an important lifelong, highly beneficial part of the lifestyle. I continue to see this personal unfolding in my class members and in myself.

I've watched many others experience the "fitness unfolding" process. Out-of-shape students become aerobically fit, and then add other activities such as weight training, running races, some winning world records for their age, and participating in triathlons. As they add other activities to their repertoire they become nutrition-conscious and apply their energy and tenacity gained in fitness to other areas of their personal and professional life. The unfolding process is one of growth.

Mel Zuckerman, owner of the Canyon Ranch Spa, expresses the process concept well. He states "One of the maxims I've come to embrace is, wellness is not a destination. It's a journey. I'm on that journey, and will be all my life. I'm healthier today than I was ten years ago--but...I have a lot to learn. But step by step, I'm making my way." (Zuckerman, p.15.)

Fitness is a process that evolves if you stay with it. A goal-based program can be planned and implemented, but should be assessed and modified periodically. A fitness program matures through constant feedback from the body and mind. It's a combination of physical, mental, emotional, and social consideration. Interest changes as potential increases, leading toward more growth.

UNFOLDING THE RIGHT KNOWLEDGE AND HEALTHSTYLE--FOR YOU

Many people fail to see the connection and role that nutritional eating **and** exercise play in disease prevention. In a recent survey (done for American Health magazine), researchers polled over 800 adults on how important various health concerns were to their health. Fifty-five percent responded that "staying free of disease" was the number one priority and extremely important to their health, yet only 33% reported "nutritional eating" and "exercising regularly" as extremely important to their health. This gap illustrates (to me) that many people overlook the importance of good nutrition and exercise in remaining disease free.

Furthermore, those polled rated the following above good nutrition and exercising: avoiding smoking, environmental concerns, love relationships, having a positive life outlook, having family/friends help when in need, knowing how to cope with medical emergencies, and avoiding excesses such as eating and drinking too much. (American Health, March, 1989, pp.63-67.)

Exercise and good nutrition greatly influence all of the above. Exercise helps to foster a positive outlook because of physiological changes that occur, notably the production of endorphins (pain relievers) and the breakdown of stress chemicals which help alleviate anxiety, stress, and depression. This can result in a better emotional state, improving relationships and giving a person greater self-confidence and self-esteem. The two factors

together also improve the immune system, as well as reduce risk for heart disease, diabetes, arthritis, cancer, osteoporosis, and other diseases. This is not to say that other uncontrollable factors (such as hereditary predisposition to certain disease, or infection, pollution, environmental hazards, and accidents) have no influence on our health and longevity. These factors do influence our health, but an improved immune system and state of mind fostered by good nutrition and exercise may influence your predisposition for getting a disease.

It is important to realize that you have considerable control over your health through exercise, nutrition, and other healthy habits. Too often, people let others control their health--by default--through lack of knowledge. Information on leading a healthy lifestyle and how to do it was not readily available, until recently. Now you have the **choice**. Would you rather continue unhealthy lifestyle practices today and pay later by having poor health and feeling bad? Or are you willing to take some control of your health? Focus on good nutrition and exercise and you can promote your health and lower your risk factor toward disease.

Perhaps you want to exercise to improve your health and lifestyle, but believe that you have waited too long. For years you may have been sedentary and now are overweight. Friends and neighbors might have been exercising for several years and you cannot exercise with them in your condition. Or you may be younger but so far have been unable to motivate yourself to exercise. You may realize that inactivity itself is a health risk factor and you should exercise. Fitness Unfolding offers clear, sensible, and simple information for you, no matter your age or condition. It's never too early or too late to begin a lifetime fitness program.

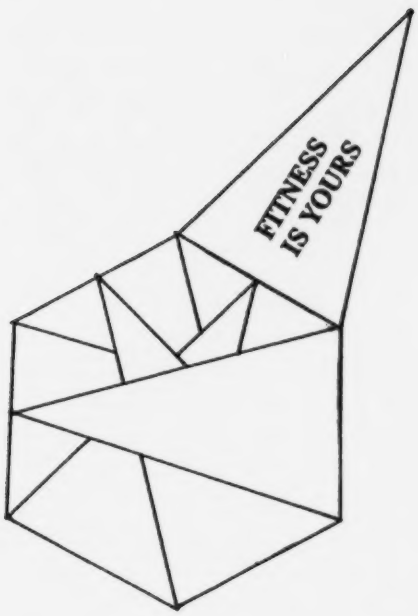
The body is a beautiful and wondrous machine that renews itself again and again. Barring genetic predisposition to disease, even a body that is abused by lack of exercise, deprived of nutritious food, and stressed bounces back and repairs itself through the years. If abused too often by years of neglect, however, untimely degeneration begins and the body becomes weak. Keep the body strong, flexible, and healthy for a zestful life free from disease by following a healthy regimen.

Jon Kabat-Zinn discusses the finely tuned regulatory mechanisms that exist through the body and how the body's systems maintain a dynamic internal balance, called homeostasis. He states that "our bodies have very robust and resilient built-in mechanisms, developed over millions of years of evolution, for maintaining stability and vitality in the face of constant change. He also notes, however, that "if we abuse the system too much, say, by drinking more alcohol than the body can tolerate, then later on we may wind up having to give some thought to our liver. But by that point it may be disregulated beyond repair." (Kabat-Zinn, pp. 244-245.)

Let fitness unfold in your life, starting now.

YOU CAN DO IT!

1. WHY NOT BE FIT?



1. WHY NOT BE FIT?

FITNESS IS YOURS FOR THE TAKING

Fitness is available to you now more than ever before. Newspapers, magazines, and TV media are providing more and more information about the importance of fitness in our lives, including exercise and nutrition. Celebrity athletes, actors, politicians, and others eagerly discuss and write about their particular fitness programs. Fitness centers offer a variety of different exercise programs in virtually every community, and many hotels across the country have health centers for those traveling. Health Spas are flourishing, as many people plan their vacations around them. Although inundated with fitness programs and information, however, the majority of people in the United States are not taking advantage of the opportunity to dramatically improve the quality of their life. (They seem to have all kinds of excuses.)

How about you? Are you ready to take advantage?

Keep in mind that fitness is not the exact same thing for everyone--due to wide-ranging individual differences in age, current state of health and condition, activity level, body "chemistry," motivation, and perceptions of the purpose and meaning of fitness.

Nevertheless there are many common benefits among people who maintain fitness programs: they feel better, physically and mentally, about themselves and about things in general, they look better, and they are on the right path to prevent diseases.

Since fitness became a part of many American's lives, deaths due to heart failure have decreased. The American Heart Association reports that the number of deaths from heart and blood vessel disease dropped 24% over the past decade. This decrease is associated with a combination of healthier living habits, such as improvements in eating, exercise, and stopping smoking. (Daily Camera, Jan. 14, 1989, p.3A). Wellness has increased!

A recent study, "Physical Fitness and All-Cause Mortality," (by S. M. Blair and others, reported in the Journal of the American Medical Assn., Nov.3, 1989, V.262, No.17, pp.2395-2401) showed that even moderate levels of exercise greatly reduced mortality. A group of 13,344 men and women were tested for fitness level on a treadmill and then assigned to five fitness categories, ranging from low to high. The study followed the group over eight years to track deaths and their causes. Outcomes showed that "Higher levels of physical fitness appear to delay all-cause mortality primarily due to lowered rates of cardiovascular disease." The study showed:

- o The most physically fit had reduced death rates.
- o Death rates from all causes for the least-fit category were 3.4 times higher for men and 4.6 higher for women than the most fit people in the group.
- o Unfit people without risk factors had higher death rates than fit people with them;
- o Physically fit men and women had much lower cancer death rates; and
- o Moving out of the least-fit category into the moderate fitness category reduced risk of death and illness.

("Reebok Instructor Newsletter," produced by the Institute for Aerobics Research, Dallas, TX, v3, n2, p.4).

Research indicates that "aerobic" physical activity promotes fitness, which tends to lower the risk of heart disease, as well as other chronic diseases. People engaged in fitness are less likely to suffer from heart disease

than the general public because, typically, their cardiovascular system is improved, they have less body fat than inactive persons, their diet is healthier, and they suffer less from stress. Fitness Unfolding explains how these typical attributes of fitness work.)

I suspect that many people have not yet become active in fitness because they are not aware of the real benefits to themselves! Others are active, but at such a low level that they do not achieve sufficient cardiovascular benefits.

Recent national surveys depict the fitness environment in the U.S. today, but show wide variance in the estimated percent of population that "exercises." Although the proportion of physically active population has increased substantially in recent years, only 20% or less of the adult population exercises with an intensity, frequency, and duration generally recommended for cardiovascular health.

This was shown in a University of Michigan analysis of national data from the 1984/86 Simmons Market Research Bureau which surveyed 1,900 men and women, age 16 to 84, about their participation in exercise. Whereas 80% exercise no more than 60 days per year (once every six days), the frequency needed to maintain fitness is 156 days per year (three times a week). (IDEA Today, Oct.1988, p.4). A study by the U.S. government's National Health Interview Survey found that 59% of the U.S. population is not getting a minimum amount of exercise (Vogue, Oct. 1987,p.3.)

WHY PEOPLE DON'T EXERCISE

Although research shows that appropriate exercise and good nutrition offer better health and wellness, appearance, and sense of well being, MOST PEOPLE DON'T EXERCISE. Why? Several reasons for not exercising include the following:

Impatience. Impatience is a 90s attitude. Busy and pressured, we have a bad case of hurry-up-itis. We want everything fast, including "instant" food, fast-fix prepared meals, and fast food chains. Authentic fitness and athletic abilities take time and can be "bought" only with work, and cannot be purchased with money.

Natural State Misconception. Many people seem to believe that fitness is a natural state that one is born with and that can't change much with a little exercise and a good diet. They need the eye-opening facts to correctly understand that fitness can make them look and feel better, as well as healthier.

Belief That They Get all the Exercise They Need Performing Domestic and Other Activities. To improve the cardiovascular system you need to engage in exercise which demands large quantities of oxygen for prolonged periods of at least 20 minutes, at the appropriate intensity and frequency. Your daily tasks do not do this. Chapter 4 tells you how to work out aerobically.

Lack of Understanding About Body Care. Most people (especially young people) don't stop to think that the body requires exercise and good nutrients. Younger people, especially, don't realize that the internal systems need to be exercised and nourished. What you do now effects your body 10 or 20 years from now. Through the years we ask a lot of our body. Contribute toward making it efficient and healthy through good nutrition and exercise.

Lack of Self-Confidence. When you lack self-confidence, you are less likely to try something new (such as fitness), or you try and don't think you do very well, and this leads to less confidence. To gain confidence,

set small fitness goals, write them down and keep track of them, and succeed at these. Then set more demanding goals, working up gradually. Most important, be kind to yourself, by being patient and moderate. In the long run, fitness can add to your self-confidence which will extend into other areas.

Lack of Understanding What Aerobic Exercise is and How to Attain It. The word aerobic has been used without helping people understand that it is a simple concept and can be practiced easily. Many people think aerobics is synonymous with aerobic dance. There are many forms of aerobic exercises. Don't let the jargon of the fitness and health industry throw you. (Chapter 4 explains the concept of aerobics.)

Unawareness of the Many Benefits of Fitness. Most people have the notion that fitness is "good" for you, but are not aware of the many specific benefits (listed in chapter three). Being aware of these benefits serve to motivate.

Misinformed About How to Begin an Exercise Program. Sometimes friends who exercise steer people in the wrong direction. You need to follow a program designed to meet *your* interests and needs. Read chapters 2 and 4 to get the right information.

Denial of Present Low-Level of Fitness Abilities. Most people overestimate their present physical condition, thinking they are in better shape than they are. They (and you) should have a physical exam and a fitness test to measure fitness level, and a body composition test to measure your fatness level. Many sedentary people may weigh the same as they did 10 years ago, but have gained fat weight and lost muscle mass through the years. The tests will accurately measure your fitness condition.

Also, if available in your community, have a computerized health risk appraisal which gives you a personalized profile of your current health and physical condition (based on a questionnaire of your family's and your health history and your current health habits). Results help you to become aware of strengths and weaknesses regarding your health, and to tailor a fitness program based on these.

The Folk Wisdom of Aging. There is an old myth among many people that as they age they should decrease physical activity, i.e., that the prerogative of growing old is inactivity. Research, in contrast to this myth, shows the opposite--that anatomically, physiologically, and neurologically we **need** physical activity. A decline in physical activity reduces health and longevity. (Hanna, pp. 39-43.)

Lack of Value of Health. "I do not think it improper to say that what we invest in life determines how much we get out of it. It is a question of whether we think that our lives are at least as important an investment as, for example, real estate or stocks. It is my observation that many humans do not value their personal bodily future as highly as they value the future of their material possessions." (Hanna, p. 89.)

Many people seem to be willing to gamble with their health, taking it for granted. Emerson said it best when he said "The first wealth is health." It's very difficult to live productively in poor health and once it is lost, it is much harder to get it back. Iyengar discusses the consequences of ill health or sickness. "If his vehicle breaks down, the traveler cannot go far. If the body is broken by ill health, the aspirant can achieve little." (Iyengar, p.24.) Why go through the misery and high cost of illness if it can be prevented by a healthy lifestyle? Don't wait until illness becomes the big stick to change your lifestyle.

Lack of Motivation. This is a serious concern, because only you can motivate yourself. You must reach a point where you decide to change. Organizations such as Alcoholics Anonymous acknowledge that they can be there to help people and set a good example, but to stop drinking each person must be motivated. So it is with fitness. You can see marvelous examples of fitness and be inspired, your doctor can tell you to exercise, but you need to really want to do it and stick with it. Borysenko notes that to make any change you first of all must be motivated to make a change, then you must act (i.e., you must do it), and then you must have the determination to carry it through. Motivation must be present for you to begin the first step. (Borysenko, p.38.)

Various studies on exercise adherence show that exercisers who are self-motivated "reflect willpower or self-regulatory skills such as goal setting, self-monitoring of progress, and self-reinforcement, all believed to be important for maintaining physical activity." (Bouchard, p. 83).

"EXCUSES" FOR NOT EXERCISING... AND REBUTTALS TO THESE

Here are some of the excuses I hear most often, along with my response.

Excuse: "I don't have time to exercise."
Response: You only need to spend about three hours a week to maintain fitness. Your life does not have to revolve around exercise. Life is full when the physical, mental, emotional, and spiritual aspects of life are balanced. Occasionally I meet someone from my class who dropped out because they were too busy. Invariably they say they never felt or looked better than they did when they were in my class and they are sorry about losing their fitness. You need to make time and stick to exercise. After you have exercised for about six weeks, you will begin to have more energy and be more productive, so you will more than make up the time spent exercising.

Excuse: "I hate to exercise."
Response: There are many different ways to exercise and many do not require special skills. The variety available to choose from will surprise you. Exercise is not limited to calisthenics. Seek out an exercise that you can enjoy. For example, are you a bird watcher? Learn to hike at an aerobic pace that will improve your cardiovascular system, then do some bird watching. Do you like to shop? Go to a new mall. Briskly walk at an aerobic pace surveying stores in which you want to shop and then return to them. Explore all the possibilities for exercising, choose one you like, and stick with it.

Excuse: "I don't want to get injured."
Response: Inactivity is debilitating. (See p. 23). Begin by choosing an exercise that is virtually injury-free and exercise in a safe and effective manner at a pace that is right for you.

Excuse: "I tried exercising for awhile and dropped out."
Response: Try again. Choose an activity you like and stay with it for six weeks. Chances are, after that you will be hooked.

Excuse: "I'm too old, out of shape, overweight,..." (...and so on).
Response: You are never too old, out of shape, or overweight to begin exercising at a low intensity that is safe for your age and physical condition. Research shows that exercise will improve your health and also your capacity for performing every day tasks.

Excuse: "I don't have the money to spend."
Response: You don't need to spend much money to begin exercising. You need good

shoes and low cost apparel. You will pay a small fee for a class, or can walk or participate in "no cost" activities (see Chapter 9.

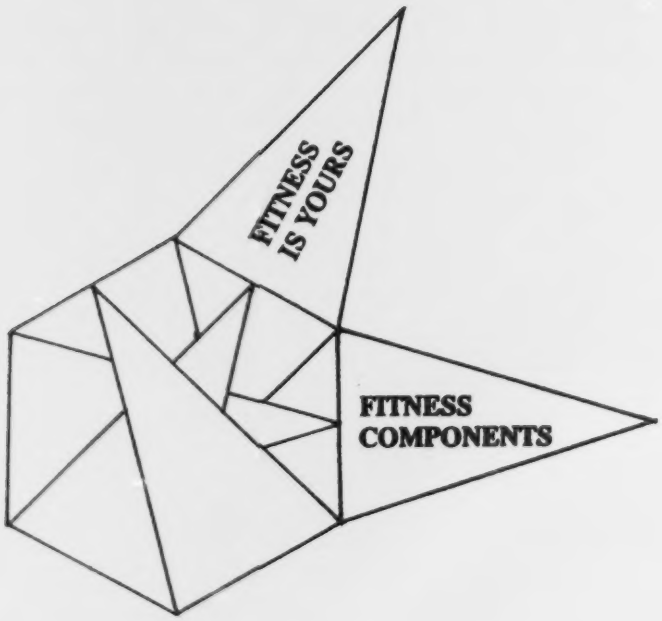
Excuse: "I feel self-conscious about the shape I'm in."
Response: Exercise in sweats and a T-shirt to cover up your present shape. Most people are so involved in their own exercise activities, they pay little attention to how others look. You will find that others will respect you for your hard work. If you are overweight, check out some exercise programs designed and intended for "grand" people.

Excuse: "I have diabetes (or another metabolic disease) and I'm afraid to exercise."
Response: Check with your doctor. Odds are he will tell you how much you can benefit from exercise and give you advice on an appropriate program.

I hear many more excuses for not exercising. Most are not legitimate reasons. Realize this and get on your way to a healthier lifestyle.
I believe that if you are beginning fitness, and, particularly, if you have a limited amount of time to give to a program, an easy way to become fit--in the true meaning of the word--is to join an organized aerobic fitness program which incorporates the basic components of physical fitness: cardiovascular health; lean body weight; muscular strength & endurance; and flexibility. However, if it is not possible to participate in a structured program because of inaccessibility, a time factor, or simply a desire to work out alone, there are a number of ways that you can become fit on your own. You can do home workouts, with videos if preferred, or with equipment, implement a walking program, take up jogging, or other activities. Chapter 9 discusses this aspect, including pitfalls.

YOU CAN DO IT!

2. WHAT IS PHYSICAL FITNESS?



2. WHAT IS PHYSICAL FITNESS?

Being physically fit means that you have good cardiovascular health, lean body weight, muscular strength and endurance, and flexibility.

Most people are familiar with the first category--cardiovascular health--and conceive of the fitness concept as improving the cardiovascular system. Although this is a major part of fitness, the other components are essential to pursuit of fitness and good health.

In regard to a definition of fitness, physiologists, such as Nieman (p.33) and others, suggest that you are physically fit when you have the ability to conduct your daily activities with sufficient vigor and energy, without tiring and a feeling of stress, and with a feeling of optimum mental abilities. You maintain a state of body wellness which helps prevent chronic diseases.

Recent American College of Sports Medicine (ACSM) guidelines define fitness as "the ability to perform moderate to vigorous levels of physical activity without undue fatigue, and the capability of maintaining such ability through life." (ACSM Position Stand, "The Recommended Quantity and Quality of Exercise for Developing and Maintaining Cardiorespiratory and Muscular Fitness in Healthy Adults," in Medicine and Science in Sports and Exercise, V.22, No.2, April, 1990, pp.265-274.) These meanings encompass having and maintaining all the major fitness components.

Further, it is important to note that fitness is not some possession you attain; rather, it is an ongoing process. As you progress, you gain more fitness and greater awareness of fitness.

CARDIOVASCULAR FITNESS

Having good cardiovascular fitness means that the heart, lungs, and blood vessels work together efficiently to deliver oxygen to the muscles. Good cardiovascular fitness results in low blood pressure, a low resting-heart-rate, and less chance for heart disease and heart attack. You can maintain exerting activities using large muscle groups for an extended period of time and finish without becoming exhausted.

An accurate measure of cardiovascular fitness is the maximum amount of oxygen you can take into your body (maximal oxygen uptake, or VO2 max). To build and maintain good cardiovascular health you must train and condition this system by engaging in exercise that places demands on your body to get and distribute more oxygen. Exercises such as jogging, aerobic dance, and cross-country skiing need to be done for the duration, intensity, and frequency appropriate for you and your current health status. (Chapter 4 focuses on aerobic exercise and the beneficial effect it has on your cardiovascular system.)

LEAN WEIGHT

Having lean weight means that the proportion of body fat is low. Body fat can be measured in a number of tests, including the skin pinch test with calipers, which measures skin fold thickness. Body composition of the fit person has very little fat in proportion to muscle weight (i.e., more muscle mass and less fat in comparison to the norm).

Lean weight does **not** mean or imply **low weight**. A person with lean body weight may actually weigh more than one with high body fat. Body weight, then, is not a good indicator of body composition since muscle weighs more than fat. In his book, Fit or Fat, Covert Bailey suggests tossing out scales and concentrating on maintaining low body fat,

because that is a better indicator of the fit person. According to an ACSM chart, percentages of body fat for those in good health are 15-22% in women and 8-15% in men. (ACSM "Fitness Instructor Workshop and Certification Reference Guide," p. xix-35). This is discussed more in Chapter 11. Exercise combined with good nutrition helps you to be lean.

Having a lean body lowers your risk for a number of degenerative diseases, improves your appearance, and provides more muscle mass which increases your metabolism. (See Chapter 3, p.25 and Chapter 11, p.147.)

MUSCLE STRENGTH AND ENDURANCE

Muscular strength is defined (by Pipes, p.24, and other exercise specialists) as ability of your muscular system to exert maximum force (involving pushing, pulling, or lifting) against an object or resistance all at once. In simple terms, the President's Council on Physical Fitness defines muscular strength as the ability to lift heavy objects, and muscular endurance as the ability to repeat a movement requiring strength. An example of a strength training exercise is a weight lifter doing a bench press. The most common means to building muscular strength and size is weight or resistance training. For strength development, you must progressively overload your muscles. This is usually done with high resistance for a small number of repetitions.

Muscular endurance, which relates to your ability to exert force over an extended time period (Pipes, p.27), depends somewhat on muscular strength and cardiovascular health. Endurance training consists of using low resistance and a high number of repetitions. To build muscle endurance you can use hand weights, stretch cords, calisthenics, or toning classes. Examples of calisthenics for developing muscle endurance include sit ups, leg lifts, and push ups.

Strong muscles make you look more well-proportioned, shapely, firm, and toned, because skeletal muscle tissue gives the body form. Your posture and carriage improve when you have strong muscles to soundly support your frame. Furthermore, regarding appearance as well as health, they help you stay lean because muscle tissue accelerates caloric expenditure, burning fat at a faster rate, and thereby helps you control body fat.

Strong muscles also help you do everyday tasks --i.e., lifting, shoveling, exercising-- with less effort, placing less stress on the heart. When you have strong muscles, you perform better in any activity requiring strength, are less likely to be injured, and your connective tissue is more protected. Strong back and abdomen muscles and joints help to minimize injuries and protect you from lower back problems and pain. Evidence also indicates that strong muscles protect against osteoporosis because muscle activity stimulates bone building.

FLEXIBILITY

Flexibility means that the body is fairly supple and pliant--that a person can bend, stretch, twist, and lean without incurring muscle injury, pain, or discomfort. Many fitness experts define it as the ability of joints and muscles to move through a "full range of movement." When flexible, your connective tissues and muscles are more elastic and you have greater range of motion, better posture which helps prevent low back pain, and reduced risk of injury. A flexible body moves with ease and grace and feels wonderful.

Your connective tissues (tendons, ligaments, fascia, skin, and covering material for organs, muscles, and bones) deteriorate both from underuse (inactivity) and overuse (over-train-

ing abuse.) With both under- and overuse, connective tissue shrinks,tightens, and may lead to tears or damage of the tissue. John Jerome states that "you don't lose suppleness because you get old or out of shape; you get old or out of shape--or injured--because you've lost suppleness." (Jerome, p.2.)

It is important to know that flexibility varies among individuals depending upon body structure, sex, and age. Females are generally more flexible than males. As we age, and/or become sedentary, we may lose some flexibility. However, with proper stretching, and calisthenics, flexibility can improve.

Maintaining flexibility is probably the most neglected aspect of fitness today with many people not understanding that it is a component of fitness. One of the classes I teach focuses on flexibility, balance, and strength. Some "drop-in" people who don't understand the full meaning of fitness express their bewilderment about this class, which does not focus on the cardiovascular aspect of fitness, and I have to explain that it encompasses the other important dimensions of fitness.

A book for those interested in a scientific understanding of both theory and practice of stretching is Science of Stretching, by Michael J. Alter, Human Kinetics Books, 1988. Current knowledge on flexibility is explained in terms of its limitations and optimal development. Functional anatomy, methods of stretching, and causes of injury are discussed.

The following chart summarizes the components of fitness with definitions, training methods, and types of activity.

TABLE 1: WHAT IS PHYSICAL FITNESS? (The Five Components)

Components	Definition	Training Method	Types of Activity
Cardiovascular Health (CV)	Ability of the heart, lungs, and blood vessels to work together efficiently so that you can do exerting activities for an extended period of time and finish without becoming exhausted.	Training CV system by doing exercises that place demands on your body to get and distribute more oxygen. (See p. 36: Frequency 3x week Intensity 60-90% of Target Heart Rate * Time 20 or more minutes each)	Walking, jogging, running, cycling, swimming. (see p. 40.)
Lean Body Weight	Proportion of body fat is low.	To reduce body fat, you must burn more calories than you eat through the combination of aerobic exercise and proper nutrition.	Planned healthy eating. Aerobic and weight training exercises.
Muscular Strength	Muscles get bigger. Ability of muscular system to exert maximum force against resistance, i.e., ability to lift heavy objects.	Progressive overload of muscles. Usually done with high resistance and small number of repetitions. (See p. 50 & 72: Frequency 2 X week)	Weight training (heavy weights).
Muscular Endurance	Ability to exert force over an extended period of time; ability to work out for long durations.	Progressive overload of muscles, usually done with low resistance and high number of repetitions. (Frequency same as above.)	Hand weights, stretch cords, calisthenics, toning exercises.
Flexibility	Body is fairly supple and pliant. You can stretch, bend, twist, and lean without incurring muscle damage. Ability of connective tissues (including joints and muscles) to move through a full range of motion.	Daily static stretching progressively helps your connective tissue adapt and and maintain healthy, resilient tissue.	Stretching, Yoga.

* Some researchers say 12 minutes is enough; others suggest 30 or more minutes is more appropriate. ACSM guidelines call for 20 to 60 minutes of continuous exercise.

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FURTHER INFORMATION

These brief definitions of fitness components suffice for the person who wants to begin a fitness program for the purpose of improving their health. If you are interested in a more thorough explanation of components, seek out one of the books in the abstracted section.

Although the five above are the recognized major components, fitness as measured by some physiologists also includes elements of *motor fitness*: coordination (ability to move different parts of the body separately in harmonic action); speed (ability to move rapidly); agility (ability to change position and direction quickly and easily); reaction time (ability of a muscle group to respond to a stimulus); and balance (ability to keep the body in equilibrium during movement). (Sharkey, pp. 60-63.) Elements of motor fitness are not of immediate concern to the person beginning fitness, but would be important to those who want to go beyond the intermediate level of fitness to perform better in such activities as dance, sports, and martial arts. (Simon, pp.42-43.)

Remember that, despite the fact that aerobic exercise is the foundation of any exercise program--even when you have limited time--a balanced program should include exercises in muscular strength, endurance, and flexibility. You need an exercise program which will both strengthen muscles and then stretch (lengthen) them. You want to develop both upper and lower body muscles. For the beginning exerciser, this is readily accomplished by joining an exercise class that provides this blend. When you work out on your own, however, incorporate these elements in your program.

FITNESS PROFICIENCY

You will always find some variability among individuals regarding their proficiency in each of these components. There are, nevertheless, some standards by which the individual can measure these factors. Abstracts of books which detail methods for self-testing, analyzing, and evaluating your present level of fitness are found in the appendix. (See Simon, K. Cooper, Sharkey, and Kusinitz.) Techniques are discussed for measuring cardiovascular health, body composition, muscular strength and endurance, and flexibility.

Many programs geared to the general population do not require that you be tested before entering a class, but some centers offer professional testing services or advise participants about testing and prescription services available in the community. (See p. 57). Some specialized programs are designed for "high risk" individuals, such as coronary heart disease patients. These programs are suited to that individual's fitness level, medical conditions, and activity interests.

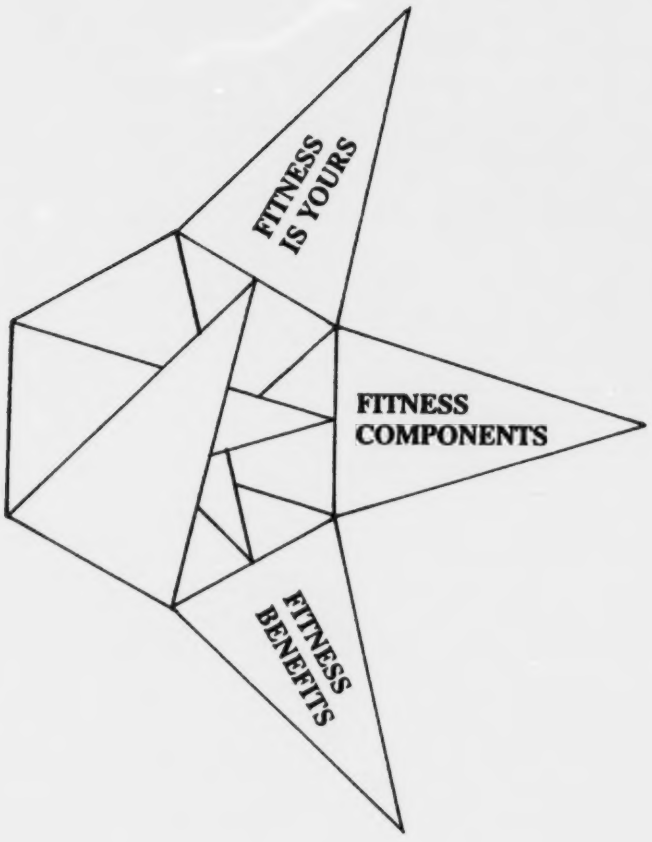
THE BENEFITS OF FITNESS ARE AVAILABLE TO YOU

When you have a high level of cardiovascular health, lean weight, and muscular strength, endurance, and flexibility, you will look and feel better. Regular exercisers have glowing skin, radiant personalities, firm bodies, and look terrific and radiate good health.

The many benefits of fitness are described in the next chapter. You can attain a high level of fitness with patience and a commitment to a better you.

YOU CAN DO IT!

3. WHY PARTICIPATE IN FITNESS?



3. WHY PARTICIPATE IN FITNESS?

BEING SEDENTARY IS A RISK FACTOR

What happens to your body if you don't exercise? A misconception is that the body wears out from use, but the opposite is true. The statement, "use it or lose it," applies to physical activity. Exercise physiologists emphasize that inactive people typically develop a frail heart, inadequate circulation, shallow breathing; have little energy; lose muscle strength and endurance and get flabby, atrophied muscles; develop dry, less supple, hardened ligaments and tendons; have bones that become less dense and more likely to fracture; have more body fat, and have more health problems, including heart disease.

The American Heart Association reports that heart disease is the nation's #1 killer, with one person dying from it every 32 seconds. Research conducted at the U.S. Center for Disease Control (CDC) shows that lack of adequate exercise is an independent risk factor for heart disease; i.e., as significant a risk as smoking, high blood pressure, and high cholesterol levels. CDC scientists indicate that inactivity may actually contribute more than other factors to the high rate of heart disease--sedentary people are nearly twice as likely to get heart disease as those who exercise regularly. This finding is significant since federal surveys show that approximately 60% to 80% of Americans don't exercise enough. (Vogue, Oct. 1987, p.3, and The Physician and Sports Medicine, Nov. 1987). Further, CDC reports a 1984-87 survey showing that only about 8% of adults are exercising three times a week vigorously for 30 minutes each time. (Daily Camera, July 8, 1989, p. 4A).

A major research study conducted at the Center for Disease Control (CDC) showed that being inactive (i.e., participating in physical activity less than three times a week for 20 minutes) is the number one risk factor. (Morbidity and Mortality Weekly Report, Vol. 39, No. 32, August 17, 1990. Center for Disease Control, 1600 Ciston Road, N.E., Atlanta, GA 30333, (404) 639-3311.)

Exercise can help prevent and change degenerative conditions, training the heart to become stronger, circulating blood throughout your body more efficiently, and improving lung function. It strengthens weak muscles, promotes stronger bones and ligaments, and raises metabolism to help lose body fat. Further, exercise can help prevent chronic diseases such as diabetes, cancer, and osteoporosis. There is everything to gain from exercising, provided it's done in a safe and effective way.

HEALTH AND OTHER BENEFITS

The health benefits of participating in cardiovascular fitness three times a week, and strength training two times week, along with following a sound nutritional diet, are overwhelming. When you understand all of the advantages of working out, the choice for selecting fitness as a way of life is clear. After you have trained aerobically for several months--at the appropriate frequency, intensity, and duration for your fitness condition (see Chapter 4)--you can expect the following positive changes to take place internally and externally as your body adapts to the demands of training. These benefits are summarized in Chart A, p. 32.

CARDIORESPIRATORY

When your cardiorespiratory system has been trained, it will operate more efficiently so that you can participate in moderately strenuous activity over an extended period of time without tiring. According to physicians, physiologists, and researchers, physiological changes result in the following benefits to the cardiorespiratory system.

Training the body through exercise improves the functioning and efficiency of the heart, circulatory system, and lungs, thereby improving delivery, absorption, and utilization of oxygen by the exercising muscles.

o Exercise improves heart function. The heart muscle itself becomes stronger. It can pump more blood with each stroke and per minute--so a greater amount of blood can carry more oxygen to the working muscles (see below). The increased volume of blood pumped and increased oxygen intake combine to slightly raise the number of red blood cells which then carry the oxygen to your body's tissues. This enables the body to better transport and absorb oxygen, giving you more endurance and energy when engaging in other daily activities. Increased blood flow also sends more nutrients to the muscles and more efficiently washes away waste products.

o Resting heart rate decreases. At rest, the trained heart does not have to work as hard or to beat as fast to pump the necessary volume of blood through the body. Your heart slows down and relaxes as stress is reduced. Blood pressure is lowered.

o Coronary blood vessels, as well as other blood vessels, expand and are able to send more blood to the working muscles. Also, there is an increase in the small blood vessels (capillaries) which supply oxygen to the heart and other muscles.

o Enzyme activity is increased in the body muscles, which can remove and utilize oxygen from the blood more efficiently. "Exercising muscles get more blood, extract oxygen from the blood, and use oxygen to burn sugar (glycogen) and generate energy." (Simon, p.9). Adaptation to exercise results in greater increase in work capacity.

o Lung capacity increases. The amount of oxygen that you take into your lungs increases with aerobic exercise, training your lungs, muscle tissues, and delivery system to handle more oxygen. Physical fitness is often gauged by the measurement of the highest amount of oxygen that can be taken in (used) by the body during hard work. (This is called VO2 Max). Some studies associate increased lung capacity with greater longevity--see aging benefits, below. (K. Cooper, p.113).

o Total cholesterol is reduced by the interaction of exercise and a low cholesterol, low fat diet. With exercise, the high-density lipoprotein (HDL) ratio--the "good" cholesterol which helps clean out the arteries--increases, reducing the risk of atherosclerosis (hardening of the arteries). (See Chapter 10, p. 126, for information on cholesterol).

o Blood has less tendency to clot, thereby diminishing the possibility of a heart attack. Exercise produces a clot-dissolving enzyme (fibrinolysin) which thins the blood, making it flow better and reducing heart attack and stroke risks.

More detailed information and explanations are provided in books by Sharkey, Cooper, Simon and Kusinitz. (For bibliographic information, see abstracts in the Appendix.)

BETTER MENTAL FUNCTIONING

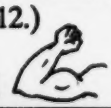
o Researchers believe that exercise improves mental functioning. As stated above, exercise

improves the delivery and absorption of oxygen in the body, including the brain. K. Cooper's research (p.28) shows a connection between fitness and mental acuity, reasoning that efficient circulation of blood through the body, produced by exercise, includes the brain. Perhaps that explains why people who work out appear to be happier and more productive at their jobs. More oxygen to the brain means it operates more effectively. Loehr and McLaughlin report on mental functioning benefits that aerobic exercise produces, such as making more red blood cells and improving respiratory efficiency, both of which result in more oxygen reaching the brain, thereby improving mental performance. (Loehr, p.113.)

Quoting from an article by Howard Hunt at the University of California, San Diego, Kimberly Williams notes that "oxygen is a requirement for the electrical signaling that takes place between brain cells. Increased oxygen at the cellular levels makes those cells better able to store and retrieve information. As a result short-term memory, especially, is enhanced because of a better ability to focus attention for a longer time." (Dance Exercise Today, June/July, 1988 p.34).

A study by neurologist William Greenough (University of Illinois) found that when rats were exercised aerobically, they averaged a 20% increase in the number of blood vessels nourishing the cerebellum. He also found transfer application--where rats responded more efficiently to one form of exercise, they better handled other types of physical activity. (IDEA Today, Nov/Dec, 1990, p.12.)

SKELETAL/MUSCLE SYSTEM



o A number of biochemical changes occur in skeletal muscles (the muscles which move your bones), increasing their size and ability to more efficiently utilize oxygen to produce energy and burn fat. You do not tire as quickly because your muscles are more resistant to fatigue from the greater blood flow to muscles. Increased strength makes daily activities easier.

o With exercise, there is an increase in the density and strength of bones, ligaments, tendons, and in the thickness of cartilage in the joints. Bones are a living entity, designed for constant rejuvenation. Physical activity stimulates the production of new bone cells and the increased deposition of calcium and other minerals, with the end result being stronger bones and prevention of osteoporosis. Researchers report that some of the loss in bone density that occurs during aging is a result of decreased levels of physical activity associated with growing older. NASA's studies on astronauts's muscle and bone losses during orbits in space (there is no gravity to stress the body) help illustrate the debilitating aspects of inactivity on the body and the importance of exercise. Exercise helps keep your connective tissues (ligaments, tendons, facia, and cartilage) supple and strong.

HEALTHY BACK

o Proper exercising strengthens and makes more flexible the abdominal, back, and hip muscles which help to brace the spine and prevent bone and disk shrinkage.

FAT LOSS

o Exercise improves body composition (especially with proper diet), decreasing total body fat and increasing lean body weight. Aerobic exercise uses fats as fuel and helps speed up metabolism (the rate at which you burn calories) so that you burn more calories. By reducing overweight and obesity--which are significant health hazards in the United States and are associated with a wide variety of

diseases, including cardiovascular disease, cancer, diabetes, joint, bone, and gall bladder disease, among others--you are clearly in better health. If you are nutrition conscious and watch your caloric intake, your weight can be controlled and your proper weight maintained. (See Chapter 11 on weight control for more information).

IMMUNE SYSTEM

o Research indicates that regular, moderate aerobic exercise can improve your immune system. Regular exercise appears to enhance immunity by boosting natural killer cell activity which defend against tumors and viruses. Moderate aerobic exercise also stimulates production of an immune booster, interleukin-l, which calls defense cells into action against acute infection. (American Health, Dec. 1987, p. 61).

DISEASE PREVENTION

o America leads the world in degenerative diseases. Many researchers, including the Center for Disease Control, indicate there is good reason to believe that regular exercise can lower adult's risk of heart disease, diabetes, arthritis, osteoporosis, and other chronic, degenerative diseases (Vogue, Oct. 1987, p.3). By living a healthy lifestyle that includes exercise and good nutrition, you can influence whether or not you will develop diseases that may run in your family. For example, recent research has shown that exercise may promote bone growth in older women, preventing osteoporosis. In a study of older women, sedentary females lost bone mineral while the physically active women gained in bone density. ("Reebok Instructor News," v.l, #5, March/April 1988, p.6.) In regard to warding off cancer, a pertinent quote from Dr. James Rippe's new book Fit for Success: Proven Strategies for Executive Health, is "The major hurdle that must be overcome is the prevalent perception that cancer is an act of God, unrelated to personal habits and choices. ... It is now estimated that between 70 and 80 percent of all cancers could be prevented with careful attention to daily habits and practices." (Daily Camera, Dec. 28, 1989, p.1-B.)

SLOWER AGING

o The aging process can be slowed--and also reversed--through appropriate exercise! As sedentary people age, they lose bone and muscle mass, their connective tissue dries out and hardens, their heart rate and blood pressure rises, and the amount of oxygen they can take in decreases. Younger persons consume and utilize greater amounts of oxygen (VO2 max), and without exercising this amount decreases with age. Inactive people after the age of 25 start losing VO2 max at the rate of approximately one percent each year. Physiologists tell us that approximately 50% of the loss is related to inactivity. (Smith, Everett, p.530.) In contrast to degenerative changes caused by inactivity, exercise helps reverse these aging changes. Researchers claim that people aged 30 to 70 who exercise consistently retain up to 80% of their physical abilities.

Peter Raven, ACSM Past President, stated that while maximum oxygen intake normally declines with age, research studies reveal that regular exercisers have no decrease in oxygen uptake from age 45 to 65. One study demonstrated that sedentary people (average age 63) who were put on a year-long exercise program showed very significant increases of oxygen uptake. Other studies indicate that remaining physically active into and beyond a person's 40s can cut their "physiological age" by as much as 10 to 20 years! (Vogue, Dec. 1985, p.187 and Oct. 1987, p.3).

Thomas Hanna, writer and physical therapist, responds to the myth that as people age they should decrease physical activity. He states, "The truth is very different. If you want to pin a motto on your wall, pin up this one: 'Function maintains structure.' The more popular motto is 'Use it or lose it.' This advice is correct, anatomically, physiologically, and neurologically." He goes on to say that if not exercised, bones become soft, muscles become weak, and brain cells deteriorate. Further, he states "this softening, weakening, and deterioration of our resources takes place gradually and insidiously--not because of aging but because of what we cease to do as we age." He continues, "Those who believe that they should take it easy as they become older are deluded; they are persons surrendering their life functions bit by bit. For most people, the act of growing up, maturing, and settling down to adult life is an act of decay. It is a deliberate, and usually well-calculated, act of gradually giving up the functional abilities acquired during the process of growing up." (Hanna, p.39.) He supports his statements with generous references to physiological, anatomical, and neurological research on aging and physical activity and concludes with the following. "In sum, the best of our scientific knowledge points directly to what I am suggesting in this book: that many of the physical problems attributed to old age are instead functional problems of disuse." (Hanna, pp. 39-43.)

John Jerome states that "in the most carefully designed scientific test, it is virtually impossible to discriminate between the effects of aging and the effects of inactivity." "When the elderly are fit the (aging) phenomenon more or less disappears. They aren't elderly anymore. The ailments and disorders are caused by lack of movement, by underuse." (Jerome, p. 60.) Other researchers agree, noting that many health problems, illnesses, and disorders associated with the aging process may result from a sedentary lifestyle that accompanies aging.

In regard to cognitive abilities of the elderly, older adults who exercise regularly and vigorously have improved mental functioning according to a study conducted at Scripps College of 300 men and women between 55 and 88 years. Findings of the study (reported in Psychology and Aging, Vol. 4, #2) are that regular exercisers have greater mental abilities in the realm of problem solving, memory, and reasoning. (IDEA Today, March, 1990, p. 31).

Cisar and Kravitz report (IDEA Today, Jan., 1991, p.31) that reaction time and movement, balance, and flexibility improves through exercise. They state that "exercise helps maintain the integrity of the central nervous system and psychomotor control, possibly due to increases in regional cerebral blood flow or elevated cerebral metabolism from increased sensory stimulation and arousal. Hence, age related decreases in reaction and movement times are minimized...similarly, age-related decreases in balance and flexibility are also reduced by physical exercise."

IDEA Today reports on a study appearing in The Physician and Sports Medicine Journal (April, 1990) entitled "The Effect of Physical Activity and Inactivity on Aerobic Power in Older Men (A Longitudinal Study)," conducted by researchers at San Diego State University. The sample consisted of 30 men--half regular exercisers and half nonexercisers. Regular exercisers traced from age 45 to 68 were compared with 15 controls tested at age 52 while training, and then again at age 70 after not exercising for 18 years. Regular exercisers maintained their resting blood pressure and lost only 13% in VO2 max, while the control group of nonexercisers had a rise in blood pressure and a loss of 41% in VO2 max. (IDEA Today, June, 1990, p.7.)

A Life Extension Foundation study, conducted at the University of Denver's Institute of Gerontology, compared 60 participants in the 1989 Rocky Mountain Senior Games to average senior citizens. To determine if these athletes functioned physiologically younger than the rest of the population within their age group, these athletes took a battery of 17 biological aging tests--measuring such things as heart-lung function and cholesterol level. On average, senior athletes tested 11.2 years younger than the general population in their age group. One man tested 28.5 years younger. This shows that exercise slows down aging.

Prevention (August, 1988, p. 53) reports on one sedentary 70 year-old woman so crippled by arthritis she could not tie her shoes. After working with weights for two years her health improved so much she added running to her workouts, won her first race, began race walking, and now racewalks in master meets. Her testimonial shows how disease can be controlled through exercise.

A study conducted at Tufts University by physiologist William Evans showed that muscle strength and size improve when the elderly exercise. For eight weeks, 80 and 90 year-olds in a nursing home lifted 15 pounds with knee extensions. Their muscle strength increased 160% and muscle size 10%. (American Health, July/August, 1989, p.68).

A book that covers the physiological benefits of exercise in regard to retarding biological aging is Biomarkers: Determinants of Aging You Can Control (Evans, William, Ph.D., and others. Simon and Schuster, 1991). The authors are researchers at the Human Physiology Laboratory at the USDA Human Nutrition Research Center on Aging at Tufts University. The "markers" illustrate that if you are inactive, you'll typically see decreases in your : muscle mass (resulting in less strength); aerobic capacity; blood sugar tolerance (predisposing some to adult onset diabetes); High Density Lipoprotein ratio (the good cholesterol which helps clean the arteries); bone density (at a certain point makes you more susceptible to osteoporosis); and basal metabolic rate (the rate at which your body burns calories at rest). You will also see increases in body fat and blood pressure. The authors' research shows that these declines and increases are a result of disuse and can be reversed through exercise.

ANXIETY AND STRESS REDUCTION

o Exercise provides a psychological balance in life by reducing anxiety, depression, and stress. People who participate in regular exercise have a better self-concept, more self-confidence and self-esteem, a more positive outlook, and a greatly improved state of mind. Exercise's stress-reduction benefit is discussed in the Jan/Feb issue of American Health, 1988 (p.28). Dr. James M. Rippe comments that "stress chemicals" (catecholamines) which circulate in the body when you are stressed and cause you to feel edgy are broken down by a moderate aerobic workout, thereby relieving tension.

Scientists have discovered that a pain reliever --a natural tranquilizer (endorphins) that brings pleasure and makes you feel more relaxed--is produced in runners and others who work out aerobically, producing a natural "high". Endorphins have a calming effect--reducing pulse, breathing rates, blood pressure, and tension after exercise.

In an article, "Stress and Exercise," Susie Griffin discussed how exercising works to reduce stress. She reported K. Cooper's comment that trained exercisers generate higher levels of endorphins which are produced quicker and remain in the body for longer periods of time, in comparison to sporadic exercisers who produce endorphins

only after a workout. (IDEA Today, Feb. 1990, p. 67-70).

More and more people who exercise regularly report a unity of mind and body--a unity which reduces stress. Moreover, the attitude of challenging the body in different physical areas tends to carry into a person's work.

INCREASED ENERGY

o After several weeks of regular exercise, your energy level will increase, both when exercising and in your daily life activities, and you can do more without becoming tired or exhausted. Chapter Four describes how aerobic exercise improves the ability of the body to draw oxygen from the air, transport it through the body, and utilize it as energy (i.e., improvement of VO2 max), thereby improving our capacity for work. (See p. 24, cardio-respiratory benefits, and Chapter 4). So, you may spend perhaps three hours a week working out, but you will gain many more productive hours a week due to a gain in energy. You probably will also find that you have more time for additional enjoyable activities.

TRANSFERABILITY

o When stamina is developed through exercise it carries over to other activities. Well developed muscles become an asset in any sport; flexibility is helpful for all physical activity that you perform.

IMPROVED APPEARANCE

o Your appearance will improve in terms of healthier looking skin, and better muscle tone, body composition, and posture. Aerobic activities promote better circulation and, as circulation increases, the skin glows and the hair shines. (As the body heats up an increasing amount of blood is directed to the outer core of the body and the skin receives more nutrients.) More developed muscles help hold your body erect and show definition of good muscle tone, resulting in a better shape. Good flexibility helps you move your body effortlessly and gracefully. If overweight, weight loss will improve your appearance.

MIND/BODY BALANCE

Exercise helps to bring our mind and bodies into balance and influences our performances in other areas. It helps foster and maintain proper balances in lifestyles, emotions, work, and living environments, enhancing not only the physical, but also the mental, spiritual, and emotional make up. For example, proper exercise and eating habits require planning for long term fitness, fostering character development in ability to delay gratification. It takes time to make the body fit.

Fitness principles practiced in setting goals, persevering, focusing, and setting high personal standards can carry over into other home or professional areas, leading to personal growth as well as better quality of life.

LIFE STYLE CHANGES

o As you continue in a fitness program, you tend to become more active generally and interested in other sports and outside activities. You begin to pursue a healthier lifestyle including good nutrition and a joy of living.

SOCIAL CONTACTS

o Last, but not least, if you join a health club, are in a fitness class, or participate in fitness functions such as races, you may find social benefits resulting from exercising with a group. You meet a variety of people interested in a similar life style, yet often from

different age and occupational groups. You can socialize during these activities, as well as avail yourself of the opportunity to socialize on other occasions with fitness friends.

SUMMARY OF BENEFITS

The chart on p. 32--"Benefits of Aerobic Training"-- summarizes the many benefits of this healthy activity.

RESPONSIBILITY TO CUT NEEDLESS MEDICAL COSTS

Another reason for keeping fit is that it is each person's responsibility to do as much as possible to help keep the enormous, rising medical costs of the nation down. In an article titled "No End in Sight for Booming Health Costs," Daniel Greenberg notes that health spending for 1986 rose about seven percent, while prices of most goods were holding level. Medical spending soared at over three times the rate of inflation.

By 1988, the percentage of gross national product (GNP) devoted to health care was nearly 12 percent--more than $2,130 per person per year. The $500 billion annual U.S. health care expenditure will soon rise to $1 trillion (Daily Camera, 1/22/87, p.3C, 4/26/88, p.6A, 11/3/88, p.1B).

This enormity of medical costs is real, and each person can do much toward contributing to better health through exercising; controlling their blood pressure, blood fats, and obesity by proper nutrition; and avoiding tobacco. Beyond sheer cost, there are, unfortunately, hundreds of thousands of instances where patients are medically patched up but still in poor, debilitating health.

Nationwide, health insurance rates will continue to soar 20-30% in 1989. Further, more of the high medical costs may come out of each person's pocket. American corporations now spend $2,200 annually per employee to provide health benefits. Looking for new ways to cut health insurance costs, employers could decrease coverage and increase out-of-pocket costs for employees covered by traditional company health plans (Daily Camera, 10/30/88, 8C). The good news, however, is that insurance companies have begun to recognize the cost saving effectiveness of a healthy lifestyle and some are now offering insurance discounts to small firms that can show that their employees follow good health practices (Inc., 11/88, p.148).

Through a healthy lifestyle and more knowledgeable, disease-preventive self care, the majority of these costs become unnecessary and wasteful. Lives can be more productive and the unnecessary medical costs used for other, more progressive social and personal benefits. Cutting medical costs by following a healthy lifestyle is discussed further in the "prevention" chapter (12).

America still leads the world in degenerative disease. It is said that although the causes of heart disease, obesity, cancer, diabetes, osteoporosis, and other chronic diseases are multiple, *inactivity is involved in each one* (Nieman, p.18). You can do much to maintain your health by exercising, practicing sound nutrition, leading a healthy lifestyle, and pursuing a wellness philosophy.

THE BENEFITS ARE PRICELESS !!!

As you review and consider the many gains of an ongoing, personal fitness program, you may realize how invaluable--**in fact, priceless** --these benefits are.

You may have read or heard about a new growth hormone which changes body compos-

ition and apparently reverses some of the effects of old age. This hormone--a result of genetic research conducted by Daniel Rudman of the Medical College of Wisconsin--was administered to volunteers ages 60 to 80 for six months in the form of injections three times a week. After six months, volunteers' muscle mass increased 9%; fat tissue decreased 14%. Cost of the medicine was expensive: for a 155 lb. person, it was approximately $7,000. The drug has potential adverse side effects--too much can cause arthritis, diabetes, enlargement of face and hands, and possible heart failure. It also caused a rise in blood pressure in some volunteers and could affect metabolism. (Daily Camera, July 5, 1990, p.1 and 9A.)

Disadvantages of this hormone as it now exists are: high expense; inconvenience and time factor in driving to an office for injections; and looming possibility of negative side effects.

In contrast to such a risky drug, changing lifestyles to include appropriate exercise and good nutrition plays an important role in maintenance of health and fitness by producing significant physiological improvements. (These improvements depend on initial physical condition and capacity for improvement as well as age and the kind and intensity, duration, and frequency of training.) Increases in strength as a result of weight (resistance) training over a period of six months, according to ACSM and others, can range from up to 20% to 30%. (ACSM Position Stand, p.269. *The percentage of improvement is much greater and more significant than for those taking the growth hormone!*

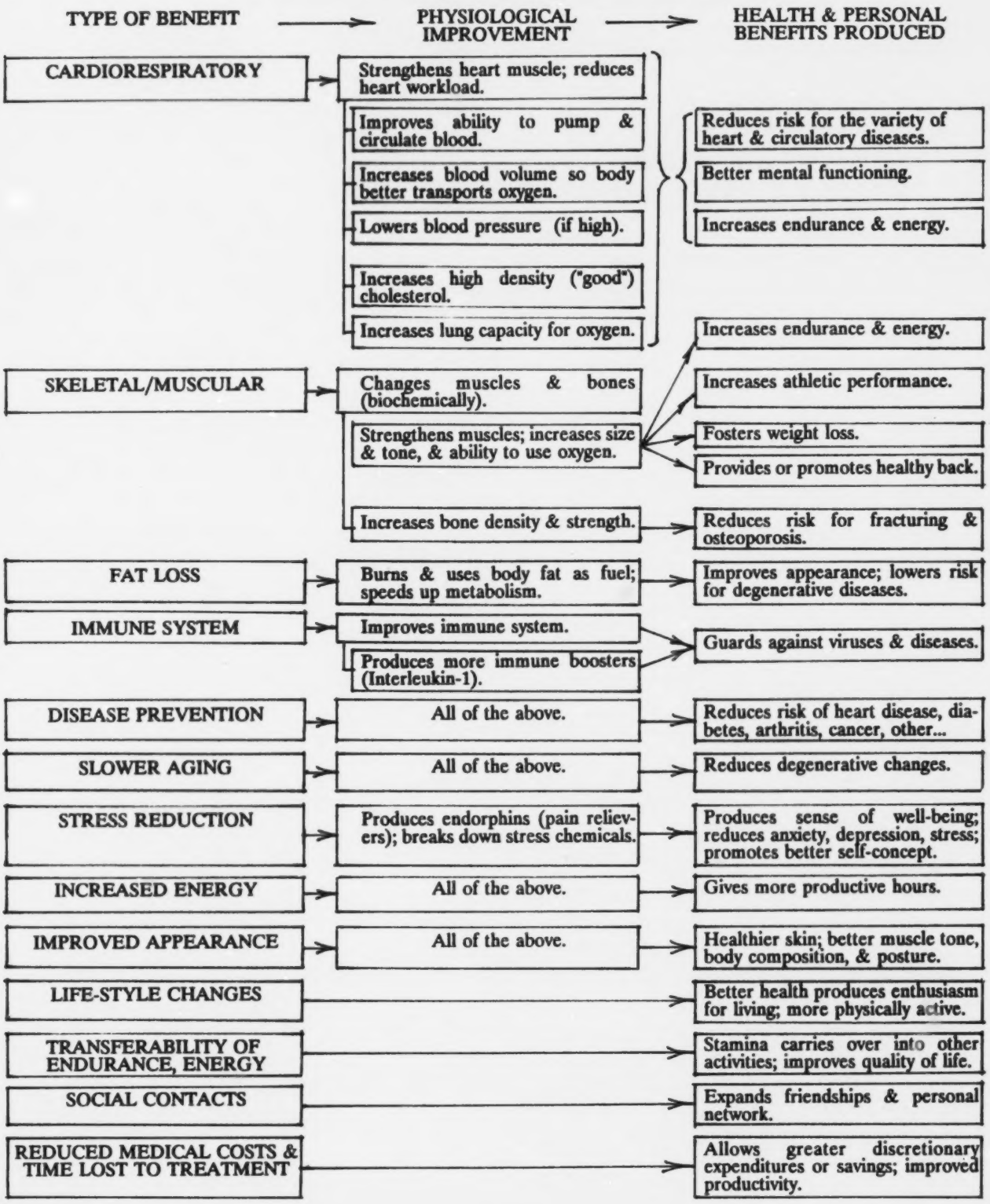
"Reebok Instructor News," V3, No. 4, focuses on the physiology of aging and exercise. One paragraph notes: "Scientists are discovering that the true fountain of youth can be found within our own genes and cells, and enhanced by our lifestyle choices. Someday, there may be marketable potions or pills which delay aging. Meanwhile, our best bet to live longer and better is to mobilize our own body's resources by making wise health choices." ("Reebok Instructor News," Institute for Aerobics Research, 12330 Freston Road, Dallas, TX 75230.)

If a pill were available that could miraculously give us all these health advantages, we would gladly pay for the rest of our lives whatever price was asked. However, you cannot "buy" fitness with money, even though the benefits are worth substantial amounts.

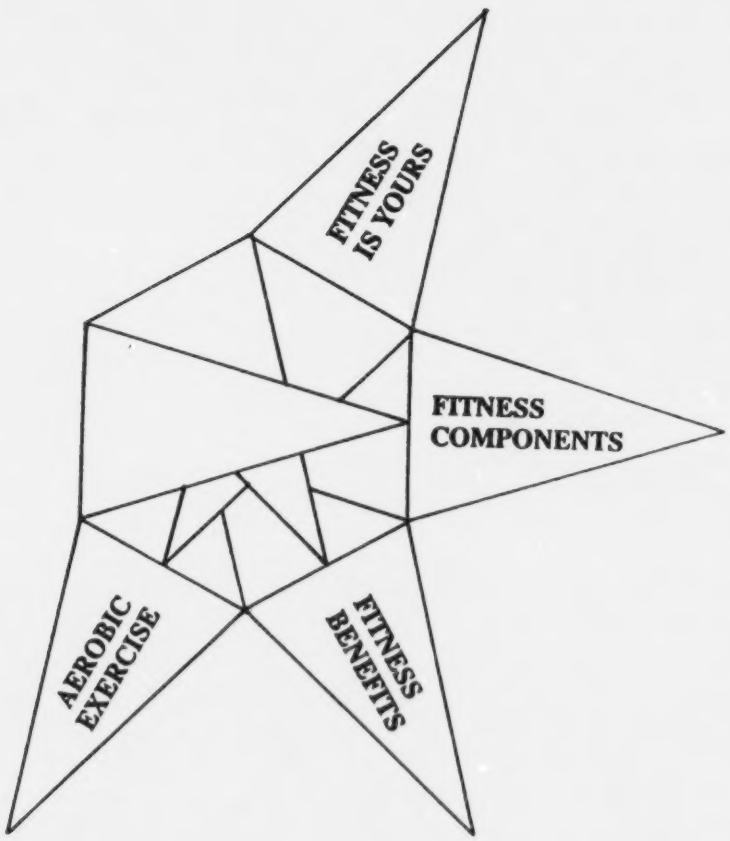
These incredible benefits from leading a healthy lifestyle "cost" you only (l) a relatively small amount of your time for aerobic and strength exercise and perhaps a small amount of time each day to learn and practice proper diet and (2) the price of a good pair of workout shoes, some low cost workout apparel, and typically modest fees if you attend organized aerobic classes.
Truly inexpensive when you think about it!

YOU CAN DO IT!

CHART A: BASIC BENEFITS OF AEROBIC TRAINING


TYPE OF BENEFIT
PHYSIOLOGICAL IMPROVEMENT
HEALTH & PERSONAL BENEFITS PRODUCED
CARDIORESPIRATORY
Strengthens heart muscle; reduces heart workload.
Improves ability to pump & circulate blood.
Increases blood volume so body better transports oxygen.
Lowers blood pressure (if high).
Increases high density ("good") cholesterol.
Increases lung capacity for oxygen.
Reduces risk for the variety of heart & circulatory diseases.
Better mental functioning.
Increases endurance & energy.
SKELETAL/MUSCULAR
Changes muscles & bones (biochemically).
Strengthens muscles; increases size & tone, & ability to use oxygen.
Increases bone density & strength.
Increases endurance & energy.
Increases athletic performance.
Fosters weight loss.
Provides or promotes healthy back.
Reduces risk for fracturing & osteoporosis.
FAT LOSS
Burns & uses body fat as fuel; speeds up metabolism.
Improves appearance; lowers risk for degenerative diseases.
IMMUNE SYSTEM
Improves immune system.
Produces more immune boosters (Interleukin-1).
Guards against viruses & diseases.
DISEASE PREVENTION
All of the above.
Reduces risk of heart disease, diabetes, arthritis, cancer, other...
SLOWER AGING
All of the above.
Reduces degenerative changes.
STRESS REDUCTION
Produces endorphins (pain relievers); breaks down stress chemicals.
Produces sense of well-being; reduces anxiety, depression, stress; promotes better self-concept.
INCREASED ENERGY
All of the above.
Gives more productive hours.
IMPROVED APPEARANCE
All of the above.
Healthier skin; better muscle tone, body composition, & posture.
LIFE-STYLE CHANGES
Better health produces enthusiasm for living; more physically active.
TRANSFERABILITY OF ENDURANCE, ENERGY
Stamina carries over into other activities; improves quality of life.
SOCIAL CONTACTS
Expands friendships & personal network.
REDUCED MEDICAL COSTS & TIME LOST TO TREATMENT
Allows greater discretionary expenditures or savings; improved productivity.

4. WHAT IS AEROBIC EXERCISE?



4. WHAT IS AEROBIC EXERCISE?

You may think that your everyday activities--cleaning house, mowing the lawn, caring for children, gardening, and so on--provide enough exercise to keep you "fit". But they, in fact, do not! These everyday activities are missing a vital ingredient for physical fitness, namely, cardiovascular training.

Dr. Hellerstein, a cardiologist and researcher, tested and followed the lifestyles of almost 3,000 people who had heart disease. In regard to their lifestyle, he noted: "On the whole, people don't work hard enough to tax their hearts. We may feel tired at the end of the day. But few of us increase our heart rates to a level that could be considered exercise." (Hellerstein, p.179.) For an abstract of this book, see the Appendix.

This chapter defines and discusses aerobic exercise--the key to cardiovascular fitness, talks briefly about pre-aerobic programs, shows how to take heart rate to see if you are working at the proper aerobic pace, lists exercises that are aerobic, and talks about programs that are not aerobic.

AEROBIC EXERCISE-- Defined and Discussed.

According to the President's Council on Physical Fitness and Sports, adult Americans don't understand what it is that makes exercise aerobic. No wonder, then, that "only 8 percent of the total adult population participates in regular, vigorous physical exercise," as shown in studies done between 1984 and 1987. (American Health, October, 1989, p.31.)

My teaching experience leads me to believe that as a rule, beginning exercisers misunderstand the meaning of aerobics, thinking that "aerobics" is synonymous with "aerobic dance." Aerobic dance, however, is only one form of aerobics. There are many other exercises that are aerobic--walking (at a pace that forces the body to demand more oxygen), cross-country skiing, bicycling, and treadmills, to name a few. Many times when I ask a student what he/she does in the way of aerobics the answer is "I can't do aerobics; my joints won't take it." Then I explain the meaning of aerobics.

Aerobics means "with oxygen." Exercise is aerobic when it increases your body's demand for oxygen and causes your body to force more oxygen into your system through increased pumping of the heart and lungs (cardiorespiratory) for a sustained period of time and frequency. Aerobic fitness is often measured by how efficiently your body extracts oxygen from the air, moves it through your body, and uses it as energy.

Since aerobic exercise has the greatest impact on your cardiorespiratory fitness, you need to make sure that the program you seek is indeed aerobic. (Some forms of exercise are not aerobic, or only partially aerobic, such as tennis, weight lifting, and short, fast sprinting.) *To be fit aerobically you need to engage large muscle groups in non-stop exercise working within a range of 60 to 90% of your maximum heart rate for at least 20 minutes or more, three times a week or more.* (See the FIT formula on the next page.)

Routine aerobic exercise "trains" your cardiovascular system to operate more efficiently. You begin an aerobic exercising program at a level that is safe and effective for you (see Table 2, p. 38) and progressively work out more frequently, work up to a more intense level, and or for longer durations. To improve, you must exercise in such a way that you press your cardiovascular system into progressively demanding, delivering, and using more oxygen than is normally needed in your

everyday activities to elicit a training effect from the body. (The overload conditioning principle. See Chapter 7, p. 72.) The many benefits of this increased oxygen are described in Chapter 3. In summary, with regular exercise, your heart pumps more efficiently and working muscles extract oxygen from the blood more easily. Aerobic exercise demands large quantities of oxygen for prolonged periods (at least 20 minutes). Steady exercise forces your body to improve those systems responsible for transportation of oxygen.

Placing demands on your body results in total blood volume increases, so that your body is better equipped to transport oxygen; the capacity of your lungs increases; your heart muscle grows stronger, is better supplied with blood, and can pump more blood. The end result is that when your body is at low energy expenditure, which you are in during most of your daily activities, your heart rate is lower and your resting heart rate decreases, so that your heart does not have to work as hard.

THE FIT FORMULA

The F.I.T. formula *for normal, healthy populations for maintaining aerobic fitness is frequency* (how often per week), *intensity* (how hard; i.e., percentage of maximum heart rate you work at), and *time* (how long, i.e., minutes per workout). This formula, stemming from ACSM guidelines and widely used in the programs and literature of fitness, is as follows:

F. Exercise at the appropriate frequency -- at least three times per week or more. (ACSM: 3-5 times per week.)

I. Work at the appropriate intensity. To do this you exercise within the 60-90% of your maximum heart rate; (depending on your physical condition, see Table 2, p.38).

T. Work out aerobically continuously over a duration of time--20 minutes or more. (Some experts say 20-60 minutes or more per session, however, this depends on the intensity and your physical condition. Another suggestion is to work out until you burn 300 calories.)

ACSM recommends low to moderate intensity activity of longer duration for the non-athletic adult. (ACSM Position Stand, p.267.)

Once you begin an aerobic program, you begin seeing and feeling the benefits within weeks. It is the kind of activity which brings results soon, especially if your diet is good.

LEVELS OF FITNESS

A number of sources (ACSM, Simon, and others) suggest exercise target heart rate zone formulas for healthy individuals of varying cardiovascular fitness. Categories and percentages (composites) listed below are given as guides. (To determine your cardiovascular fitness level, see Chapter 9, pp. 95-96.)

Low	50-60%	{out-of-shape and/or
Fair	65%	older individual
Avg.	70%	recreational fitness
Good	75-80%	
Excel.	85-90%	athletic and young

Your fitness level/category depends on your scores (if you are tested) in the major components of fitness: cardiovascular health, body composition, muscle strength and endurance, and flexibility. A person in the low category is an apparently healthy, sedentary person who tests out cardiovascularly to have high resting heart rates (over 70 beats per minute at rest) and recovery heart rates (heart rate more than 60% of maximum heart rate (MHR) five minutes after the aerobic workout), a high percent of body fat in relation to lean tissue (see Ch. 11, p. 149), and low levels of

muscular strength, endurance, and flexibility. A person in this category must exercise at lower intensity than the person rated good or excellent. Those in the excellent categories are athletic, active people with low resting rates (50 beats per minute or less, at rest) and recovery rates (heart rate less than 60% of MHR five minutes after the aerobic workout), a low percentage of body fat, and high levels of strength, endurance, and flexibility. Page 40 in this chapter briefly discusses resting and recovery heart rates. For a list of typical centers that offer exercise testing, see Chapter 6, p.57. Younger persons in good health can begin exercising without being tested provided they begin and progress gradually, and follow a safe, effective program. Chapter 6 discusses who needs medical clearance before beginning an exercise program.

If your physical condition is low and/or you are intimidated or overwhelmed with existing programs, find them too advanced, or feel that you are unable to participate at the 60% maximum heart level, consider a "pre-aerobic" program designed for those who do no aerobics, or develop your own pre-aerobic program.

PRE-AEROBIC CONDITIONING PROGRAMS

Pre-aerobic programs prepare participants for more vigorous aerobic programs. Some health and recreational facilities and centers now offer special exercise programs for the deconditioned individual. These programs provide opportunities for exercising and socializing in a non-threatening environment, offering gradual progression in increasing flexibility, strength, and ability to sustain moderate aerobic activity levels.

If you are a beginner and are older, overweight, have been sedentary for a number of years, or have risk factors listed in chapter 6, p. 59, you may find it beneficial, and can begin getting partial aerobic benefits, to start exercising at a lower intensity and work over a longer period of time and more frequently. (McArdle, p.359.) (This would be, for example, 30 to 60 minute time periods two or more times a week.) You need your doctor's permission, of course. In this case, it is important to start out at a safe level so that you will not become discouraged and will continue with a lifetime program which eventually works your heart at greater than 60% of maximum rate.

If you are healthy but have been sedentary for quite some time and want to design your own pre-aerobic program, it may be beneficial to begin a simple conditioning program on your own, such as a walking program. After several weeks of walking to condition the muscles and strengthen connective tissue, you then gradually add some intensity to the walking program (see p. 107) or pursue other activities.

A concise booklet and poster with good information and guidelines for developing a pre-aerobic exercise program is available from Reebok. A section on screening suggests that if aware of postural and anatomical problems, you should seek advice from a sports medicine specialist before beginning. (Common problems are scoliosis, back pain, knock knees or bow legs, shin splints, leg length difference of over 3/8" or more, flat feet or high-arched feet). After the screening section, self-tests are given for flexibility of shoulders, lower back, hips, thighs, and calves, and remedies for tightness offered. Guidelines and exercises cover general exercises, stretching, and strengthening. Photos accompany exercises. (For a free copy, send a self addressed, stamped envelope [.39] to Reebok, Pre-aerobic Exercise Program, c/o PKG Plus, 354 North Street, Milford, Ct. 06460).

A book with a chapter on how to create your own pre-aerobic program is If It Hurts, Don't Do It (Francis, Peter, and Lorna Francis, Ph.D., Prima Publishing, 1988, pp. 93-102) .

AEROBIC EXERCISE GUIDELINES

Aerobic exercise guidelines related to level of fitness--regarding frequency, intensity, and time--are presented in the following chart.

Table 2: FIT Guidelines for Aerobic Exercise *

(For the following continuous activities, using large muscle groups: walking, running, jogging, swimming, cycling, cross-country skiing, jumping rope, skating, rowing, racquet ball, and similar activities.)

Level of Fitness	Frequency (how often) days per wk	Intensity (how hard) %h.r.zone	Time (how long) min.workout
** Low	3	50-70%	10-20-60
Good	3-4	70-80%	20-45
Excellent	5 or more	80-90%	30-60

* Adapted from American College of Sports Medicine (ACSM) Reference Guide. Health/Fitness Instructor Workshop/Certification, 1987, p.x-3.

** The low-to-average category consists of sedentary, older adults; those with risk; and less healthy persons. This group sometimes advised to exercise at low intensity for longer time and more frequently. See previous section on preconditioning.

CAUTION: If you have risk factors or are older, you need to be exercise-tested. See pp. 58-60.

LISTEN TO YOUR BODY

Listen to your body as you exercise--and after you exercise. Pain ("ouch") should not be part of an exercise program, although it will take your body at least 2-4 weeks (depending on your physical condition) to adjust to the program. If after exercising for a week, you feel good and want to push a little harder, increase the length of time you work out or increase the frequency (the number of times you work out per week) or the intensity. Choose only one variable. If you increase all three at the same time, you can overuse your body and injury may result.

PROPER HEART RATE (♡)

When you exercise aerobically it is important to exercise at the proper heart rate--called target heart rate (THR). Heart rate is also known as your pulse--the number of heart beats per minute. Proper exercising heart rate is a percent of your maximum heart rate (which is estimated) for your age. Maximum heart rate for the young, healthy heart is approximately 220 beats per minute; heart rate declines with age. You want to exercise at a safe and effective intensity, so your current physical condition is considered in your proper exercising heart rate. Too little exercise and your heart does not improve; too much and you will be overdoing it, become exhausted, and perhaps put yourself at risk.

Target Heart Rate

A simple way to estimate appropriate target heart rate when exercising is to subtract your age from 220 to get your maximum heart rate (MHR). (This formula is based on long-standing physiological research, although it does not appear to apply to a small percentage of individuals.)

Example: if you are age 30, subtract 30 from 220. 190, then, is your maximum heart rate; i.e., the predicted maximum that your heart will beat for your age. For aerobic exercise you want to exercise within the range of 60 to 90% of the MHR; i.e., within the range of 114 to 171 in this example. (Only an athlete in excellent condition should work out at 90%).

Aerobic Target Heart Rate Zone (person in good condition:

		Example:
Formula--	220	220
minus your age	_____	-30
= max. heart rate (MHR)		190
times your condition	_____	x.75
= Target Heart Rate (THR)		143

To find your target heart rate you can also consult charts developed by various organizations. Below is a simple chart to approximate the 60-75% target zone for your age.

Age	Target Zone 60-75% beats per minute	Avg. Max. HR 100%
20	120-150	200
25	117-146	195
30	114-142	190
35	111-138	185
40	108-135	180
45	105-131	175
50	102-127	170
55	99-123	165
60	96-120	160
65	93-116	155
70	90-113	150

Karvonen Formula

A more precise way to measure target heart rate (THR), used by many professionals, is a method called the Karvonen Formula which takes the resting heart rate (RHR) into account. To find resting heart rate, take your pulse while you are still lying down in the morning for several days, and then average it.

220-age = Maximum Heart Rate (MHR)
MHR-Resting Heart Rate (RHR) = Heart Rate Reserve (HRR)
HRR (.65) + RHR=Target Heart Rate (THR)
HRR (.90) + RHR=THR

For example, consider a 30-year-old, with a resting heart rate of 70.

220-30 = 190 (MHR)	220-Age30 = 190 Maximum
190-70 RHR = 120 (HRR)	190 Maximum-70 Resting = 120 Reserve
120 (.65) +70 = 148 (THR)	120 Reserve X .65 = 78+70 Resting = 148 Low Target
120 X (.90)+70 = 178 (THR)	120 Reserve X .90 = 108+70 Resting = 178 High Target

In this example, the person's THR is somewhere in the range of 148 and 178. If the person is in poor condition, it would be better to stay within the lower range, whereas a person in better condition could go higher.

Perceived Exertion Method

Another way to see how hard you're working is by using the Perceived Exertion method (devised by Borg). Instead of taking your pulse, you rate yourself on how hard you feel you are working, and how well you are able to breathe and talk.

SCALE	PRESCRIPTION Breathing Exertion Feeling
1	Regular
7	Very, Very Light
9	Very Light
11	Fairly Light
13	Somewhat Hard
15	Hard
17	Very Hard
19	Very, Very Hard

For best results, work in the area of 13 and 15--somewhat hard and hard. At 60% of

MHR you should be able to carry on a conversation. At 70-80% of MHR you can speak but must breathe in between words--i.e., your speech is broken. At or over 80% you are unable to speak and are working intensely.

When To Take Heart Rate

The Aerobics and Fitness Association of America (AFAA) recommends that, if possible, heart rate be taken three times during a workout to make sure you are working at the right intensity: five minutes after the aerobic phase of a workout begins, once in the middle of the workout, and five minutes after the aerobic workout. (AFAA, p. 177.)

Taking heart rate after cool down is especially important because it shows whether you have cooled down *enough*. After five minutes of cooling down, your heart rate should be equal to or less than 60% of your maximum target heart rate. If it has not returned to that level, you need to continue walking around to bring that rate down. In class, the teacher should tell you when to take your pulse. When starting to work out on your own, take your pulse every 5 to 10 minutes after you begin to breathe hard. If you are above your zone, slow down. Remember the THR formula is not totally accurate for every individual; therefore, use the formula as a general guide and listen to your body. Apply the perceived exertion formula, also.

How To Take Your Pulse

Place your index and middle finger lightly on the carotid artery in your neck (roughly two inches on either side from the center of your Adams Apple). Do not press hard or place thumb on opposite side of neck at same time, as the blood flow could be impeded. You can count your heart rate for 6 seconds and add a zero, or else count your heart rate for 10 seconds and multiply this by 6. Either way, you will know what your heart rate is for one minute.

To get a resting heart rate, take your pulse for three mornings while still lying in bed, but after the heart has settled down if awakened abruptly. Add these three successive numbers together and then divide by three. This will give you your resting heart rate.

For your convenience, a personal worksheet to help you figure your aerobic target heart rate zone follows this chapter.

AEROBIC EXERCISES

Aerobic exercises include: jumping rope, running, step-ups, running/jogging, fast walking, cross-country skiing, aerobic dancing and exercising, bicycling, roller and ice skating, swimming, rowing, racquet sports that are not stop and go, and working out on some machines such as stationary bicycles, rowing machines, treadmills, and mini-trampolines. The important thing is that in order for these to be aerobic, you must engage in non-stop activity at 60 to 90% of your maximum heart rate for 20 minutes or more depending on the intensity of the exercise. Generally, the more intense the exercise the less time it takes for cardiovascular training. Some nonaerobic exercises do not keep you moving, including tennis, football, and weight lifting.

Kenneth Cooper rates five exercises that provide the best aerobic conditioning in descending order: (l) **cross-country skiing**--involves both arm and leg muscles; (2) **swimming**--involves all the major muscles; (3) **jogging or running**--you get the greatest benefits from this sport in the shortest amount of time; (4) **outdoor cycling**--causes less stress on the joints and muscles than

jogging; and (5) **walking**--is convenient, causes less stress to joints than jogging, however, its disadvantage is that it takes about three times as long to get the same benefit as jogging. Characteristics of other aerobic activities are also given by Cooper. (K. Cooper, pp.126-129.)

Changing Times (August, 1990, pp. 94 and 96) evaluates 16 ways to work out. Each activity is rated according to benefits (aerobic, fat loss, strength, muscle endurance, and flexibility) and costs (injury rate, minutes of workout time, and dollar costs). Information is presented in table form and the rating is according to the number of stars. The top five are swimming, cross-country skiing (outdoors), circuit weight training, running, and aerobic dance.

ANAEROBICS

The above section discussed aerobics as exercise requiring oxygen. So what is "anaerobics," on the other hand? Anaerobics means exercising without oxygen. Anaerobic activities are high intensity activities of short duration (such as sprinting) requiring recurring rest time in between. In contrast, aerobic activities let you continue an activity over an extended period of time, at an intensity that allows the circulatory system to transport oxygen to the muscles.

In anaerobic exercise, you can't continue exercising due to oxygen deficiency. Therefore, you are not adequately training the heart, lungs, and cardiovascular system to process and deliver oxygen quickly and efficiently to every part of the body. Working out aerobically allows you to work longer and recover more quickly, and has a greater impact on improving your cardiovascular system. You won't become too tired or discouraged. It will help you gain benefits mentioned in Chapter 3.

In addition, there are other reasons for working out aerobically. If you are exercising for weight control, you need to work out aerobically. Fat can be used as fuel when oxygen is present. When exercising anaerobically, carbohydrates and protein are used as fuels.

As one becomes fit, research indicates that working out at an aerobic heart rate and then alternating to an anaerobic pace (strenuous activities for brief periods) can improve overall fitness. This method is called "interval training" and is better suited for the more fit person.

Understand and follow the principles of aerobic exercise.

YOU CAN DO IT!

Worksheet I: Personal Worksheet to Identify Your Aerobic Target Heart Rate Zone

FORMULA for Max HR and Target HR:

	220	
Minus -	[ ]	your age

Equals	[ ]	maximum heart rate
Times Condition	[ ]	.....

Equals	[ ]	target heart rate

Low	50-60%	out-of-shape and/or older
Fair	65%	individual
Avg.	70%	recreational fitness
Good	75-80%	
Excel.	85-90%	athletic and young

Example:

	220	
	-30	age

	190	max. heart rate
x	.75	condition

	142	target heart rate

My exercising Target Heart Rate is _____.

I monitor my Target Heart Rate three times during each workout, as follows:

o 5 minutes after I begin it should not exceed _____ (my formula THR calculated above).

o in the middle of workout it should not exceed _____ (also my formula THR).

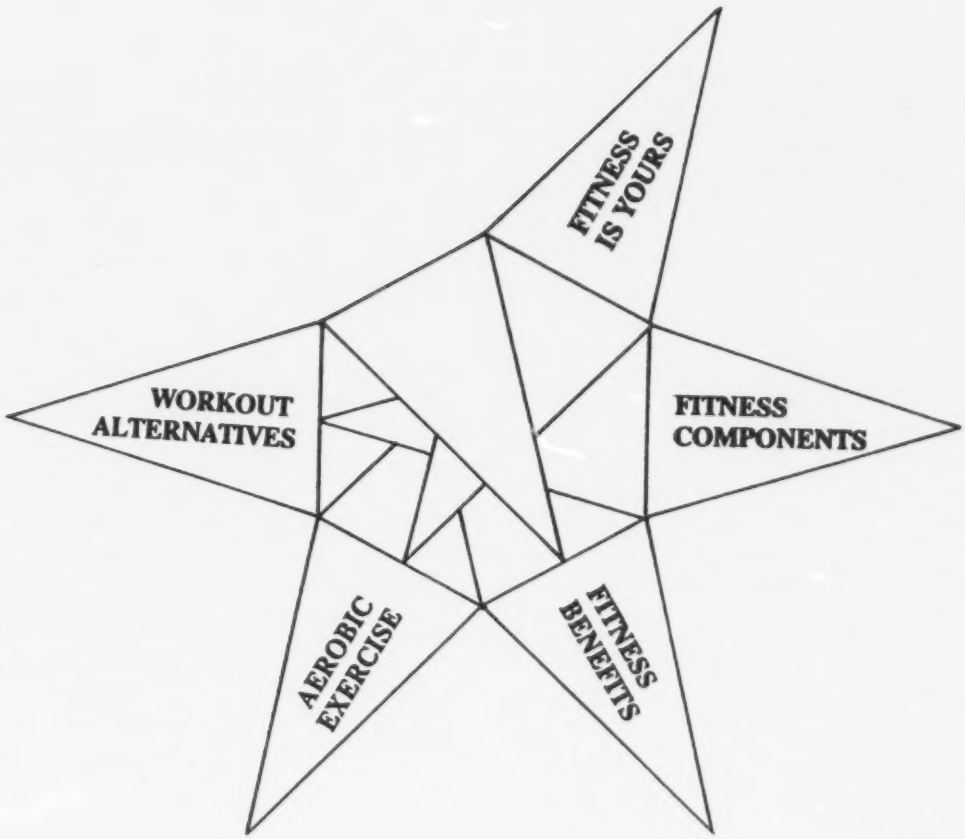
o 5 min. after cooldown it should not exceed _____ (60 percent [x .60] of my Max.Heart Rate).

R E M I N D E R S : **To measure my heart rate during my workout ---**

- o find pulse; count pulse for 6 seconds; add a zero.
- o if my exercising heart rate is higher than my target heart rate, I reduce the intensity of exercise.
- o if my exercising heart rate is lower than my target heart rate, I increase the intensity of exercise.

Using the Perceived Exertion Method, I work at a maximum level between "somewhat hard" and "hard."

5. WHAT ARE YOUR AEROBIC WORKOUT ALTERNATIVES?



5. WHAT ARE YOUR AEROBIC WORKOUT ALTERNATIVES?

You can get an aerobic workout by:

(l) attending a structured class or planned workout program at a reputable center, such as the YMCA, city recreation programs, or private health/fitness organizations and clubs;

(2) developing your own individualized program;

(3) hiring and working out under a personal trainer, and

(4) joining an organized sport program that offers partial aerobics.

Each of these has advantages, as described below.

ORGANIZED CLASS

To get a balanced aerobic workout, I recommend that beginners participate three times a week in a good, organized aerobic fitness class which emphasizes cardiovascular health, lean body weight, muscle strength and endurance, and flexibility. In a proper class program you will see quick results for a number of reasons. When you go to a class you have a mind-set to exercise, you are with a peer group whose purpose is to exercise, and you won't be diverted by other activities. It is easier for beginners to maintain consistent workouts when there is a set time for workouts and when they pay for and become committed to a class; this better insures exercising three times a week.

The organized class helps overcome difficulties of working out alone, aerobically, in a consistent/persistent manner. These difficulties are: motivating yourself and adhering to exercise three times a week; challenging yourself to progress in fitness; having the discipline to get up early after a night out, or run at noon when there is work that needs to be done on the job...or in the evening when someone suggests that you join them for another diversion or activity; and encountering interruptions when working out at home, such as phone calls, visitors, or the good old TV.

Another disadvantage to working out on your own is that it is difficult to know how to plan and design a safe, effective workout. It is easy to overexercise. You may be feeling great and let yourself go too far or too fast and get an injury. A class will foster gradual developmental workouts, be paced, and offer variety. Chapter 8 describes how to select, evaluate, and get the most from a fitness class.

A good aerobics class offers many advantages:

(1) Varied workouts. Teachers introduce a variety of activities which emphasize cardiovascular endurance and also some which will typically help you strengthen upper and lower body muscles and work opposing muscles to maintain muscle balance (calisthenics), gain flexibility (stretching and doing your exercises through the full range of motion), and become more coordinated. The variety offered should keep you interested and you will not become bored.

(2) Motivation. It is helpful to register in class for several reasons. If you sign up and pay for a class, you won't let other activities interfere. When a specific block of time is set aside for your fitness activity, you are more likely to follow through on the program. Trying to work out by yourself tends to be very difficult until you reach a certain fitness

level. In addition, social aspects of meeting people and working out together tend to make fitness fun, and often times the sense of "peer pressure" keeps you going or makes you work out with more vigor, when you otherwise might slow down or even stop.

It's fun to work out with others. (I surveyed one of my classes to find out what they wanted from it. In addition to better health, people mention that they are in class to have "fun and to make friends." Some meet socially outside of class. Classes may also schedule occasional activities outside of class, such as picnics and seasonal parties.

(3) Proper Sequence of Activities. Classes offer the proper sequence for exercising--first warming up and stretching the muscles, followed by aerobic activity, toning, a cool down, and stretching. Take the time to learn and practice this sequence. Often times when you work out on your own, you fail to take the time to follow these procedures (which by the way have been approved by fitness experts). When these sequences are ignored, injury often results.

(4) Proper Techniques. With a qualified instructor, you will learn proper techniques for exercising, such as maintaining good body alignment and correct exercise positions and movements, and the use of muscle groups of the arms and legs will be balanced.

(5) Gradual Progression. You are more likely to start at the right level of intensity, and then gradually increase that level. You normally have a choice of intensity associated with a given class. You can choose one of low, medium, or high intensity if available, or you can modify your level in any class, taking into consideration your age, sex, skills, and cardiovascular/musculoskeletal development.

In addition to starting at your own level and having the opportunity to gradually work up to another level, you also benefit by learning how to pace yourself and approach fitness in moderation.

(6) Efficient Use of Time. You work toward all elements of fitness when you work out 3 hours a week--in a good class. For the amount of time that you set aside for the class, you get maximum benefit.

(7) Education. In class, you will learn more about fitness and gain important knowledge to help you develop good habits. For example, you learn stretches which will be beneficial whenever you work out on your own. You learn how to pace yourself. Also, you may be able to gain useful information about wellness, nutrition, and other aspects of fitness. If you plan to join a class, read chapters 7 and 8 carefully.

(8) Social Support. We are social animals and tend to enjoy interacting with others. Class offers an opportunity to get together with others interested in some of the same goals. Also, for those who lack self-discipline, group exercise provides social support which can help one stick to goals.

INDIVIDUALIZED PROGRAM

Perhaps you cannot take a class. You may live in a small town that does not offer classes or maybe your work schedule does not allow you to exercise in a class because of an unavailable time slot or because you travel a great deal. Or, you may not have the money to spend on a class. (If money is a concern, check out the cost of classes at the YMCA or city recreation programs. Costs are quite moderate, and the only equipment you normally need are a good pair of shoes, some shorts, and shirt). Also, some people may not like to work out in a group. They may feel self-conscious or just enjoy exercising in the

privacy of their home, withdrawing from everyday tensions they encounter outside.

If you fit any of these categories, here are some suggestions. But first, I'll mention the advantages and disadvantages. You can develop your own good, safe individualized workout, provided you take some time to properly establish this kind of program, follow carefully the instructions given, and understand the information in this book. Chapter 9 focuses entirely on how to work out on your own.

Advantages are that you can arrange to work out when convenient for you. You can choose outdoor activities of your liking--for example, cycling, walking, hiking, jogging, jumping rope, stair-stepping-- or you can work out in the privacy of your home (or in a club) on an exercise bicycle, home rower, motorized treadmill, or other aerobic machine. Selecting an activity that you like is one key factor in sticking to a fitness program.

Disadvantages are that it takes much perseverance and motivation on your part. You must make exercise a priority. Be consistent, and initiate and sustain control. (One way to help motivation is to get a neighborhood buddy with whom to work out.) Another disadvantage is that you will not get instructions from those with experience in the particular activity you have chosen (unless you work out in a club or other organization in which there are good trainers available for consultation). Therefore, when you are stretching or doing calisthenics, you should try to do them by a mirror and check for proper body alignment. Talk to others, read and keep informed about the activity in which you are engaged. If you find yourself getting bored, try to alternate your workout activities.

Some books/videos offer good programs. Books that present exercise plans--including Wilmore, K. Cooper, R. Cooper, Sharkey, Kusinitz and Fine, the Glesser HealthMark Program, and Simon--are described in the appendix. You may also want to scan other books at the library and book store.

You can also get a good workout by using videocassette tapes. A number of good aerobic tapes to work out to, selected by Shape magazine and AFAA, are discussed in Chapter 9, pp. 102-104.

Television offers several fine fitness programs. Consider checking the schedule in your area to see if any are conveniently scheduled. Charlene Prickett, Gil Janclowicz, and others offer high quality aerobic fitness programs with good instruction, and are motivating. (See Chapter 9, p. 102, for more information).

If you plan to work out on your own read chapters 7 and 9 carefully.

Most private fitness clubs and other organizations that offer fitness programs (such as the YMCA and city recreation programs) employ fitness specialists who can help you design and implement a plan suited to your fitness status, health, interests, and time schedule. These clubs have aerobic fitness machines (cycles, treadmills, rowing, and more) as well as weight machines. If you are interested in a health club workout, see chapter 9, pp. 105-106.

HIRE A PERSONAL TRAINER

If affordable, you can hire a personal trainer to design and facilitate a customized fitness program that will focus on helping you get maximum fitness results from the amount of time and effort you expend.

The personal trainer can evaluate your present fitness level; design a personal program suited to your time schedule, level of fitness and health status, and interests and

goals; motivate and reinforce your effort to stay with fitness; and periodically measure your improvement and progress. A good trainer offers counseling on all fitness components--cardiovascular, strength and endurance, and flexibility--as well as on nutrition and stress control. If you are interested in hiring a personal trainer, see chapter 9, pp. 101-102.

JOIN AN ORGANIZED SPORT PROGRAM

Some people may not like to work out in a class situation or on their own, but love participation in team sports. There has been tremendous interest in playing volleyball, soccer, and softball recently. These programs offer a way to maintain aerobic conditioning if there is not too much stop and go and if you are already fit. You may want to play tennis or basketball. You will be motivated, have fun, and develop strength and coordination contributing toward skill development.

The biggest disadvantages are that most team sports are not fully aerobic, do not provide total conditioning, may increase injury, and are available only part of the year. Team sports are stop and go, and don't really meet all the criteria for "aerobics" to improve the cardiovascular system.

Also, you don't get general, all around, balanced conditioning because typically you are exercising only the specific muscles for the sport in which you are engaged. There is a tendency to over develop certain muscles and neglect others, and hence a chance for injury.

To prevent injury, many fitness experts suggest you get in shape before playing a sport. Finally, many of these activities are seasonal, with added risks associated with annually "getting back in shape" in a short timeframe.

To benefit from this type of program, you would have to modify to keep the program aerobic and do some work on your own. You have to give it some fastidious thought and careful planning to get an overall, year-round conditioned workout.

The authors of The Athlete Within present an excellent chapter on how to add competitive and team sports to a fitness program, describing how to get started, equipment and clothing needed, techniques, safety and precautions to avoid injury for racquet sports, baseball, soccer. and hockey. (See abstract in the Appendix.)

There are many books and magazines on just about every sport. Check your library, bookstore, and magazine rack.

NONAEROBIC ACTIVITIES

Many exercise programs are not aerobic. Listed below are two.

Toning Classes. These classes are designed to tone muscles and strengthen connecting tissues or joints. Students engage in activities such as leg lifts, abdominal exercises, etc. Getting the heart rate up and improving the cardiovascular system are not major goals. However, as I mentioned earlier, for the unconditioned person a class like this may be a good place to begin and could precede aerobic training. These classes are also good supplements to an aerobic program.

Weight Training. Typical weight training programs do not significantly train the cardiovascular system. Weight training builds greater muscle mass, strengthens muscles, and can add to flexibility. ACSM's 1990 Position Statement declares that weight training should not be used as a way to train for developing VO2 Maximal oxygen uptake. (ACSM, p.268.)

Kenneth Cooper says "it is possible to build muscle mass with weight training, but it has very little benefit to the cardiovascular system. (K. Cooper, p.109.) However, it is useful for the unconditioned person to begin a program like this two to three days a week as a supplement to an aerobics program. A word of caution for those with high blood pressure: weight training tends to elevate blood pressure.

Some centers have instituted weight circuit training. Participants move at an aerobic pace from one set of exercises to another working out at exercise stations for between 30 and 60 seconds. For example, exercisers do step ups for 30 to 60 seconds and then alternate with an exercise on a machine. These programs are aerobic and also increase muscular strength at the same time.

SPOT REDUCING MYTH

Beware of practices which are geared primarily to improving your appearance such as spot reducing and passive exercise machines. Fitness experts all agree that spot reducing programs are a waste of time and money. These practices suggest that fat can be removed from certain areas of the body by using belts, creams, sweatsuits, saunas, or other methods, such as passive exercise machines. The belief that an individual can "burn" fat only in desired areas of the body is a popular assumption, but it is not possible.

The only way to lose fat in any area of your body is to **burn overall, total fat systemically by engaging in aerobic exercise.**

OTHER FITNESS COMPONENTS TO BE SURE TO INCLUDE IN YOUR WORKOUT

Developing cardiovascular fitness is the foundation for becoming fit, however, it is important to incorporate muscle strength, endurance, and flexibility components into your workout. These three elements--cardiovascular, muscle strength and endurance, and flexibility training--are cornerstones of fitness. Several of the books in the abstract section deal with strength, endurance, and flexibility activities. (See Kusinitz, Sharkey, Simon, and others). There are also many fine books on weight training and flexibility on the market. For weight training books, see pp. 50-52; for flexibility books, see pp. 19, 52, 98.

As you gradually progress in your cardiovascular training you develop some endurance and strength in the muscles you are working. For example, in an aerobics or jogging program you develop muscle strength in your legs and (in dance aerobics) your arms as well as legs. However, all the major muscle groups are not strengthened. Many aerobic programs do not adequately exercise the upper body.

Many classes and organized programs include the three elements in their workout. A variety of strengthening techniques for some major muscle groups is included in most classes. For example, a good class works the abdominal muscles and, time permitting, other major muscle groups such as the biceps, triceps, hamstrings, and quads. Strength and endurance techniques can include calisthenics, the use of rubber bands, free weights, and other resistance equipment. However, since the goal of most classes and programs focuses on aerobic conditioning, there is usually not enough time allocated to adequate muscle strengthening. In these cases, and when working out on your own, build weight training in your overall personal program.

Weight training and/or cross-training may be particularly helpful when a person advances from the beginner to intermediate stage of fitness. Increasing intensity, duration,and frequency of exercise can lead to over-

developing some muscles in relation to others, creating muscle imbalance. For example, aerobic dance and running can overdevelop calf muscle at the expense of the shin muscle and result in muscle imbalance, causing injury (shin splints). Through weight training, the weaker muscles not used in the aerobic activity can be strengthened.

Weight Training. To build strong muscle mass, you need to add resistance--a force, especially in weight training, that tends to restrict motion. Resistance makes you work the muscle harder and through the overload principle the muscle becomes stronger. The principle implies that for strength and endurance improvements, you must place a greater workload on the body. The body adapts to this load and then a greater load is added. You progressively increase resistance in sets of exercise by adding weight (intensity) for strength and by adding repetitions (duration) for endurance. Overload is followed by a rest period in which the muscle is strengthened.

The American College of Sports Medicine (ACSM) recently revised exercise guidelines that originally recommended primarily aerobic exercise to now include their position that adults need to add strength training two times a week to their regular exercise schedule. For conditioning major muscle groups, ACSM recommends a minimum of one set of 10 exercises with 8 to 12 repetitions. The title of the new position paper is "The Recommended Quantity and Quality of Exercise for Developing and Maintaining Cardiorespiratory and Muscular Fitness in Healthy Adults." These guidelines were included in the ACSM official journal--Medicine and Science in Sports and Exercise, V.22, No.2, April, 1990, pp. 265-274. (Also available from Public Information Department, ACSM, P.O. Box 1440, Indianapolis, IN 46206-1440, $2.00.)

A number of abstracted books (in the Appendix) have good, general information on weight training for the beginner. (See Kusinitz, pp. 70-79 and 148-150; Sharkey, pp. 59-94; and Simon, pp. 28-49 and 121-160.) The referenced excerpts focus on weight training for general fitness conditioning, to improve your ability to handle everyday tasks that require strength and/or to improve exercise and sports performance. This is in contrast to weight lifting (a competitive sport in which you develop maximum strength for lifting heavy weights and which results in building very large and compact muscle mass) and body sculpting (in which you increase muscle mass and definition of certain body parts).

Most beginners want to increase muscle mass endurance and tone their muscles, rather than increase the size and bulk. To increase muscle endurance you lift lighter weights for a greater number of repetitions and take short rests of approximately 1 minute between exercises. In contrast, to build muscle size, strength, and bulk you lift heavier weights for a lower number of repetitions and rest 2 or 3 minutes between exercises. Endurance training gives you longer, sleeker muscles; strength training more compact muscles.

Three weight training terms that you may come across in reference to muscular contractions are:

Isometric--involves no joint movement or change in the length of the muscle, and in which the muscle contracts against a static object. This is not often used in weight training because muscle gains in strength are limited.

Isotonic--the kind of muscle contraction you will undoubtedly be doing when you weight train--involves moving joint and limb through the range of motion and is based on the

principle of resistance. Muscles shorten or lengthen in these strength training exercises. To weight train, you can use free weights, do calisthenics, or use machines such as Nautilus.

Isokinetic--not usually available in clubs or fitness centers--involves maintaining speed of the contraction mechanically throughout the entire range of motion. This requires specialized, expensive equipment often used in rehabilitation or specialized centers.

You can expect a number of advantages from weight training, for example, muscles improve body composition (muscle burns more calories than does fat tissue); muscles give your body shape and definition; muscles help build bone; and muscles provide strength to keep you better balanced and prevent injury in everyday activities or sports.

How much strength can you expect to get through weight training? ACSM notes "The average improvement for sedentary and middle-aged men and women for up to 6 months of training is 25-30%." (ACSM Position Stand, p. 269).

Your goals for weight training will probably be for general fitness conditioning and improving your body composition, but consider any other goals that you might have. Make sure your goals are realistic. Remember that how you work out depends on your personal preferences and goals.

You will also have to decide on what kind of equipment you want to use. Free weights (weights on a barbell, or dumbbell) demand special knowledge and techniques, more supervision, and close attention to good form; however, using free weights offers better transfer into sports that demand maximum strength and skill. Weight training machines are usually considered safer to use because you are restricted to certain lifts and movements. Of course, you can also use the body instead of weights for resistance, doing calisthenics (sit ups, push ups, and so on). The disadvantage is that you cannot vary the resistance in terms of weight added.

Weight training is highly recommended for those age 25 through the 50s and beyond. Studies show that you are never too old to gain muscle strength and endurance.

Below is some general advice advocated by weight lifters. You will need to get information from an expert and/or in-depth book before you begin weight training.

o Get your doctor's permission if you have high blood pressure, coronary or circulatory disease, other risk factors, or are overweight. (See pp.58-60 for medical considerations before starting an exercise program. Also be aware of any previous injuries.)

o Take an easy pace and ease into a weight training program. Begin with small amounts of resistance, say, half of your ability to lift a maximum weight. It is safer to use lighter weights and add more repetitions. Start with weight with which you can do 10 smooth repetitions.

o Incorporate stretching into your weight training program to maintain flexibility and prevent injury. Begin with 5-10 minutes of warm up (easy aerobics and stretching) to prepare muscles to move through the range of motion slowly and smoothly. End with cool down stretching.

o Keep breathing. Don't hold your breath. It increases blood pressure.

o Use good technique, form, and timing. Make your movements smooth. Watch your form in a mirror. Poor form often results in injury.

o Work all muscle groups to improve fitness conditioning and prevent injuries. Begin by working the large muscle groups, and conclude with the small.

o When working with heavy weights, get a spotter.

o Work out 2 to 3 days a week, with a day between each workout. Your muscles need time to recuperate.

An excellent, practical book, written by the well-known body builder Bill Pearl, is Getting Stronger: Sports Training, General Conditioning, Body-building, Weight Training for Men and Women. (Shelter Publishing, 1986.) This comprehensive guide offers weight training programs for general conditioning at the beginning, intermediate, and advanced level; bodybuilding; and strength training for 21 different sports.

If you are interested in weight training to improve your sports performance, see Joe Weider's Weight Training for Sports (Sterling Publishing Co., Inc., 1985). This book is now out of print, so you'll have to check your library. The illustrated training manual covers information on scientific training, proper nutrition, and offers specific training programs for developing the strength, stamina, abilities, and skills essential to 11 different sports.

Garrick (Chapter 5, pp.175-321) includes a large section on strength and endurance training through the use of isometric exercises, free weights, and weight machines. It is arranged by body parts. He prescribes weight training exercises for specific sports.

Flexibility is becoming more significant and acknowledged in fitness and appears as a topic in more and more articles. Fitness professionals stress its importance to overall fitness for prevention of injury, for good posture, and also for all around well-being.

When exercising, your muscles contract to execute movement and become warm and malleable, like gelatin. After a workout they harden in the contracted state (i.e., the muscles remain in the shortened state, and shrink). Unless you stretch afterwards they remain in this contracted, shortened state and become tight, uncomfortable, and more prone to injury.

To create muscle flexibility and make connective tissues more elastic and supple, you need to stretch, extend, and lengthen muscles through their full range of motion. The class or program you choose should have some stretching to create body flexibility. More on the sequence and importance of stretching is discussed in Chapter 9, p. 98.

If working out on your own, you might want to purchase a book on stretching (see the Anderson and Jerome abstracts in the Appendix) and begin and end workouts with 10-15 minutes of stretching. Bobby Anderson's book is a good one for the beginner to acquire.

Cross training--offers a balanced approach to exercise. It means you create a total fitness program that incorporates other components of fitness. You participate in several activities that compliment each other and engage the upper and lower body muscles. Triathlons (cycling, swimming, and running) provide an example of cross training for the very fit. If you are in good condition and decide to work-out five days a week, cross training adds variety and interest to your program; helps prevent overuse injuries that tend to occur when you repetitively stress only certain muscles, tendons, or ligaments; develops well-balanced muscles; and fosters higher fitness levels.

FITNESS FOR THE PHYSICALLY DISABLED

Physical activity is possible for most physically disabled people. Although the physically disabled have fewer opportunities for fitness activities, some communities provide a variety of programs and activities for these individuals. Programs may be offered through city recreation centers. YMCAs typically offer classes for back rehabilitation.

Some major national organizations for the disabled have produced pamphlets on exercise. For example, the National Multiple Sclerosis Society and the Arthritis Foundation have published booklets. If interested in this information, contact the local/area chapter, or national office, of the organization for your disability. If they have not produced a brochure, they should be able to direct you to resource people or teachers in your area, or suggest books and videos that may be available.

Two organizations that develop training materials for professionals who teach those with disabilities include:

The American Alliance for Health, Physical Education, Recreation, and Dance (AAHPERD)
1900 Association Drive
Reston, VA 22091-9989
(703) 476-3400

National Handicapped Sports & Recreation Association (NHSRA)
1145 19th Street, N.W.
Suite 717
Washington, DC 20036
(301) 652-7505

The NHSRA is a resource organization and will answer questions about exercise for your particular needs. They have also developed exercise videos for those with disabilities.

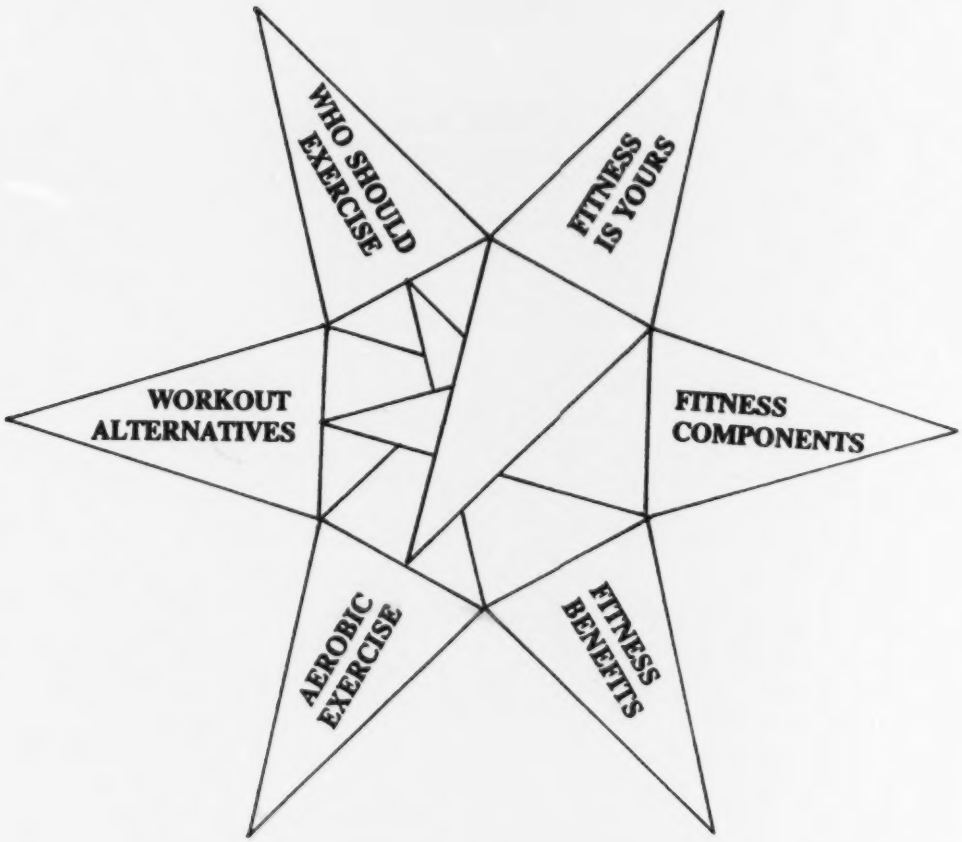
Richard Simmons offers an excellent book entitled Reach for Fitness: A Special Book of Exercises for the Physically Challenged. (Warner, 1986.) He presents a wholistic fitness program for children and adults with all kinds of disabilities such as polio, spina bifida, asthma, cerebral palsy, cystic fibrosis, and others. The program is designed for anyone with any condition that limits mobility. Simmons offers exercises for specific body areas, a food plan, and tips on how to develop mental control. The Appendix provides exercise and nutritional advice and precautions from medical experts for over 40 medical conditions. After the medical condition is defined, information is included on the common psychological or behavioral barrier to exercise, precise nutritional concerns, specific precautions for a program of general exercise, and warning signs of physical exertion.

EXERCISE OPTIONS

You have many exercise options from which to choose. Before you choose a program, however, you need to know if you first need medical clearance. Chapter six covers this topic.

YOU CAN DO IT!

6. WHO SHOULD PARTICIPATE AND WHAT PRE-EXERCISE STEPS SHOULD THEY TAKE?



6. WHO SHOULD PARTICIPATE and WHAT PRE-EXERCISE STEPS Should They Take ?

People who are seemingly healthy--free from major symptoms suggestive of cardiopulmonary or metabolic disease, major risk factors, and disease--can (should) participate in exercise, if they begin at their proper (current) ability level, proceed gradually in moderation, and use good sense.

Although exercise can help all people, the exercise needs to be appropriate for your age and health condition, (and risk factors for heart disease if you have them). Appropriate exercise performed at the right intensity, frequency, and duration benefits all, including the older; overweight; and those with cardiovascular, pulmonary, or metabolic diseases, or with joint and bone abnormalities. Studies show that with properly prescribed exercise, these people look and feel better, improve their health, as well as their quality of life.

Many apparently healthy people make the mistake of beginning an exercise program beyond their ability, become discouraged, and eventually quit exercising. In addition, starting at a level which is too difficult could be harmful to your health and result in injury.

It is helpful to talk with other people about your desire to start a fitness program--for example, your doctor, or friends who may be enrolled in a program. Discuss with them the different classes and levels which are available in your locale and ask for suggestions. Chapter 5 lists programs from which you can choose. Chapter 7 offers information on how to begin an exercise program.

MEDICAL CONSIDERATIONS PRIOR TO BEGINNING AN EXERCISE PROGRAM

This chapter provides information on considerations prior to starting an exercise program. It includes recommendations from the American College of Sports Medicine [ACSM--a professional organization, see pp. 58-60] for who should be evaluated and exercise-tested before starting an exercise program. These guidelines parallel recommendations published by other organizations such as the National Heart, Lung, and Blood Institute, the American Heart Association, and the Young Men's Christian Association (YMCA), as well as numerous authors.

The chapter also presents information on: major coronary and other risk factors; symptoms of disease; pre-conditioning programs for those not in condition and older; the effect of prescribed medications on exercise; individual differences; and the need to progress gradually in exercise and to quit smoking. The last section presents suggestions on exercises for a lifetime program by different age groups.

HEALTH EVALUATION GUIDELINES

Some centers evaluate the health status of clients before allowing them into an exercise program (although many do not). Health screening and exercise testing are typically available at hospitals, clinics, private physician office's, YMCAs, city recreation programs, university and college recreation programs, health clubs, and sports medicine facilities. Evaluation can consist of screening, physical examination, laboratory tests, and exercise testing. The extent of the health evaluation *depends upon the individual's age, health status, and activity level.* According to ACSM (pp.5-9), older individuals, or people with risk factors or symptoms of disease, or with disease require exercise testing and physician approval for exercise clearance. (Nieman, pp.42-43.)

Screening involves a personal and family health medical history evaluation---by means of a questionnaire--to initially determine your current health status. The main purpose is to identify possible health problems or symptoms that will impose limitations on testing and exercising. Information categories are: medical (e.g., present and past health, heart murmurs, orthopedic problems, medications taken...), family history (such as death of a parent due to coronary heart failure before age 50), and present behaviors (smoking, drinking alcohol, previous injuries...). Screening determines whether a person should be referred to a physician for clearance before beginning an exercise program. (Golding, p. 173.)

If symptoms of disease or coronary risk factors are detected, the screening can be followed by a physical examination, laboratory tests, and a progressive electrocardiogram-monitored exercise test (a heart stress test taken while you are pumping a stationary bicycle or walking on a treadmill). (Kenneth Cooper gives a detailed checklist of a thorough medical exam (pp. 221-234). Exercise testing is done prior to beginning a program to help diagnosis coronary heart disease; to help your physician and/or exercise medical personnel determine your capacity for exercise, and design a safe and effective exercise program suited to your age, needs, health condition, and lifestyle; and to furnish baseline data for periodically evaluating your progress. (ACSM p.36).

The following information is from ACSM guidelines for determining who should be exercise tested for chronic heart disease prior to starting an exercise program.

POTENTIAL NEED FOR MEDICAL CLEARANCE BEFORE EXERCISING

Many programs geared to the general population--aerobic dance, swim programs, and so on--assume that clients are healthy and do not require that they be screened or tested.

Precautions and screening, depending on age and risk factors, are recommended by many experts. Authoritative opinions vary, however, on exact guidelines.

The ACSM guideline (pp.2-3) is that younger people without a history of health problems or other risk factors, listed on the next two pages, can probably begin an exercise program without prior testing as long as the exercise program is safe (i.e., following proper procedures as suggested by ACSM, AFAA, or IDEA) and individuals proceed and progress in a gradual manner, and are alert to abnormal stress symptoms such as those listed below and in this book in Chapter 8, p. 91.

After a health screening, physical examination, and possibly some diagnostic tests by your doctor, a maximal cardiac stress test with physician supervision is recommended for (ACSM, pp.6-10):

o apparently healthy men 40 years old or older and women 50 years old or older who are just beginning a vigorous exercise program, (i.e., exercising at an intensity greater than 60% of VO2 max, which is about 70% of MHR.)

> Note: Medical clearance is not considered necessary when this population engages in moderate, progressive exercise (i.e., low intensity exercise at 40% to 60% of VO2 max, or about 55% to 70% of MHR) such as walking that is "well within a person's capacity to handle for 60 minutes."

o high risk individuals with symptoms suggestive of cardiopulmonary or metabolic disease (see below for list of symptoms) and/or two or more major risk factors who

want to engage in a vigorous exercise program as defined above.

> Note: Medical clearance is not considered necessary for this population at higher risk with no symptoms when they intend to engage in moderate exercise as defined on p. 58. When symptoms are present for this group, exercise clearance is needed even for moderate exercise.

o individuals with "known cardiac, pulmonary, or metabolic disease" before engaging in either moderate or vigorous exercise.

MAJOR CORONARY OR OTHER RISK FACTORS ♡

ACSM (p.6) and Nieman (pp.45-46) list major coronary risk factors (physiological and behavioral characteristics, signs, or symptoms that predispose a person to potential health problems or to developing a disease. Other authors, researchers, and physiologists have also identified these risk factors as important and consistent predictors that play a role in chronic heart disease. (K. Cooper, p. 272; Golding, pp. 176-178; Kusinitz, p.5; McArdle, pp. 572-575; Masironi, pp. 124-127; Sharkey, pp. 179-199; Simon, pp. 24-25.) You are at risk if you have:

o high blood pressure (exceeds 140/90--normal is 120/80),

o high cholesterol (greater than 240) and a high cholesterol ratio above 6 (See pp. 124-126),

o a cigarette smoking habit,

o a family history of coronary or other atherosclerotic disease prior to age 55,

o diabetes mellitus.

Some of the above authors and sources list additional risk factors which include: obesity, primarily sedentary, eat a poor diet, contend with worksite hazards, or high stress level.

SIGNS/SYMPTOMS OF DISEASE

ACSM (p.6) lists major symptoms suggestive of cardiopulmonary or metabolic disease. Other authors (Simon, p. 23, Kusinitz, p. 5) list some of these warning signs.

o pain in the chest, shoulder, arm, or surrounding areas that appears to be caused by poor blood supply to the heart;

o breathlessness after mild exertion;

o dizziness;

o breathing problems occurring at night caused by fluid in the lungs (orthopnea/ paroxysmal nocturnal dyspnea);

o pooling of fluid at ankle (ankle edema);

o heart palpitations or abnormal beating of the heart at more than 100 beats per minute (tachycardia);

o pain in the legs caused by poor circulation (claudication);

o known heart murmur.

Other reasons for seeing a physician prior to engaging in an exercise program, that are suggested by other medical experts, include if you have:

o chronic injuries;
o asthma, arthritis, or bone or joint problems;
o had recent surgery;

o frequent fainting spells;
o are pregnant. (The American College of Obstetricians and Gynecologists have developed exercising guidelines for pregnant women.)

In the above cases, you will want to discuss with qualified medical personnel or with your physician--preferably one who understands and exemplifies the importance of exercise--the type of activity you intend to participate in to get recommendations for an appropriate program. The program should be designed and prescribed for you.

For people with serious medical problems in a "high risk" category, your doctor may suggest a special exercise program with strict supervision. Medically managed programs follow the same principles suggested for healthy people, however, they differ in application of the type of exercise activities and exercise intensity, duration, and frequency, and you progress at a slower rate. (Masironi, p. 157, 167-168; ACSM, p. 96; Miller, p. 287.) It is important that the exercise program for the cardiac patient be highly individualized "in accordance with the patient's health history and clinical status." (ACSM, p.121.)

It is encouraging to know that some centers offer special physician-directed fitness programs for people who have health problems. Results of these programs have been excellent: studies show that people with heart problems and other health problems benefit from specialized programs. These people in poor health reach a better level of wellness after spending time in special centers focusing on change in their lifestyles. Well known centers are Kenneth Cooper's and Pritikin's. There are other clinics, centers, and classes in various cities that offer specialized programs. Information on 11 medical programs (including Cooper's and Pritikin's) are fully described in The Best Spas, Theodore van Itallie, M.D. and Leila Hadley, Harper & Row, 1988, pp.317-366. In addition to an overview with all the pertinent data you need to contact the centers, information is provided on programs offered, food menus, exercise and physical therapy facilities, and beauty treatments and indulgences.

PRE-AEROBICS (PRE-CONDITIONING) PROGRAM

It may be advisable for you to begin a pre-aerobics (preconditioning) program first if any of the items above pertain to you and pre-conditioning is recommended by your physician. As discussed in Chapter 4 on pages 37-38, in a pre-conditioning program you exercise at or below 60% of your maximum heart rate for a longer duration, avoiding high intensity exercise. This program will help prepare you for a regular class, i.e., it is a program to help you get in sufficient shape to then "get in shape."

You want to pre-condition your joints, ligaments, tendons, and muscles before you attempt a beginning exercise program. You can do this in about six weeks by walking at a brisk pace or by joining a pre-aerobics class, if available. Walking is an excellent exercise for beginning exercisers, older adults, sedentary, injured, overweight, and less healthy people. (For more on walking see Chapter 9, pp. 106-108.)

After you have followed a pre-conditioning program, find a suitable aerobic activity--one that has a form of exercise adaptable to the intensity of your particular program, and in which you may proceed with caution and progression. Always consider physical limitations if they are present.

PRESCRIBED MEDICATIONS AND EXERCISE

Before beginning an exercise program, if you are on medication for treatment of hypertension, thyroid, or other problems, you should know how the medication alters your response to exercise. Common prescribed medications often interact with exercise, and can effect heart rate and blood pressure. Anyone using a medication which alters the heart rate cannot accurately determine the THR using the standard formula given for determining HR (Chapter 4, pp. 38-40). When exercising, the effect of these medications on heart rate and blood pressure may lead individuals to think they are not working at or above their target, when they actually are. (AFAA, pp. 61-62; Haskell, p. 217.) For example, beta blockers slow the resting and exercising heart rate and blood pressure, nitrates raise the heart rate and lower the blood pressure, and many anti-hypertensive drugs tend to decelerate heart rate. Some authorities suggest that the perceived exertion scale be used by those on medications that accelerate or decelerate heart rate.

For the purpose of exercise prescription, ACSM (and also Haskell) recommends that participants on medications undergo a physician-administered stress test while under the influence of the medication to determine the heart rate response at varying levels of work intensity. The participant needs to work with their physician on an appropriate exercise intensity. (ACSM, p.150; Haskell, p. 217.)

ELDERLY AND EXERCISE

Older individuals should proceed into an exercise program with greater caution and take more time for adaptation. A medical exam and an exercise test administered with a physician present provide information for accurately prescribing exercise for them. The Council on Science Affairs recommends that walking with a gradual progression in intensity is a convenient and adaptable form of exercise for the elderly.

Aerobic benefits for the elderly include not only cardiovascular benefits, but also significantly improved mental ability, faster reaction times, and more creativity, according to a studies done at the Salt Lake City VA Medical Center, Medical College of Pennsylvania, and Duke University Medical Center. (Prevention, October, 1989, pp. 88-89.)
[See also pp. 26-28 for other benefits.]

INDIVIDUAL DIFFERENCES AND EXERCISE

In all aspects of beginning fitness, individuals need to recognize their age, uniqueness, and health status and feel comfortable starting at their ability level. Take your current health, body composition and chemistry, and recent physical activities into account. Develop fitness gradually and don't compete with anyone else.

THE GRADUAL APPROACH TO EXERCISE

The gradual approach is best. People improve when they stick to a program long enough and do not become discouraged. It takes time... and THERE IS NO SHORT-CUT TO BECOMING FIT.

After all, you did not suddenly become unfit; it was gradual. If you start out with the attitude that, say, in six weeks you will be jogging six miles (after not exercising for 10 or 20 years), you will soon become discouraged, burned out, or possibly injured.

Instead, a more realistic expectation is that

you will be jogging a half mile or a mile, without stopping to walk, within six to eight weeks, depending on the condition of your body. Perhaps in a year you will be jogging six miles, non-stop at a reasonable pace, feeling good and injury-free.

Experts in fitness recommend spending a month getting into shape for every year you have been out of shape. So if you have been sedentary for 20 years, expect that it will take you 20 months to get in shape. Remember the old saying, "a tree does not grow fruit overnight."

Even when participating in moderate, more easy-going exercise (like walking or stair climbing) you reduce your risk of heart disease. Prevention (June, 1988, p. 24) reports on a study of 5,930 men and women who exercised very moderately. These people were less overweight, had lower blood pressure, and lower cholesterol levels than sedentary people.

KICK THE NICOTINE

If you are a smoker, quit smoking! Smokers have more heart attacks and heart disease than non-smokers, so you will be improving your health a great deal when you quit smoking. The smoking habit is a harmful habit to health and longevity. Smoking is said to be responsible for approximately 390,000 deaths per year--one out of six deaths. In addition to the risk factors associated with smoking, the life style of smokers tends to promote poorer health. The National Center for Health Statistics 1985 National Health Interview Study reports that, as a rule, heavy smokers have more bad health habits than non-smokers--they sleep less, skip breakfast, are sedentary, and drink more alcohol.

Smoking affects the brain because not enough oxygen gets to the brain. Specifically, it can cause some loss of memory, attention span, and the ability to concentrate. Neurosurgeon Mark notes, "Smoking may cause changes in the structure of the lungs that lower oxygen concentrations in the blood. These lowered concentrations can lead to reduced function of the brain cells, from lack of oxygen. Perhaps because of some genetic factors, nerve cell malfunction related to oxygen starvation isn't equally severe in every smoker, but everyone who has lung problems from smoking experiences it to some extent." (Mark, p.45.)

According to experts and a study reported in Shape, quitting smoking will greatly enhance your health, even if you've been smoking for years. Data collected in the Coronary Artery Surgery Study showed that smokers with coronary artery disease who quit smoking the year before the study began and abstained for six years after had significantly fewer deaths. (Shape, October, 1989, p.26.)

The effect of smoking on the heart rate is not pleasant when you are working out aerobically. "If you smoke, your lung capacity is diminished. So, smokers do, in fact, have to get their lungs into shape in order to exercise to full capacity. You must stop smoking to really get fit (and stay healthy)." (Simon, p. 10.) Statistics show that smokers are likely to drop out of an exercise program. In one study, 59% of smokers dropped out of the program. (American Health, March, 1987, p.63).

You can more readily "kick the nic" when you see it as a form of chemical dependency and when you really decide to stop. There are many centers which have programs to help you stop smoking. Whatever it takes, QUIT.

The book The Well Adult (see abstract) has an excellent 13-page section (pp.134-147) on smoking and health, covering such topics as diseases associated with smoking, the physiology of smoking, and quitting smoking.

A LIFETIME OF EXERCISE FOR ALL AGE GROUPS

Victor and Frank Katch have organized the exercise needs of apparently healthy people into different age groups. (See guidelines below.) They emphasize the importance of exercising at every age and suggest exercises to pursue for a lifetime program. (Shape, June 1986, p.133-135). According to the Katch's, different kinds of exercises should be emphasized at different stages of life. For each age group they highly recommend stretching and flexibility exercise, light weights for body shape ups, and calisthenics. In the teens and 20s there are average requirements for aerobics, but in all later years aerobics is seen as a higher priority.

GUIDELINES FOR EACH AGE GROUP TO FOCUS ON

TEENS. In addition to sustaining an average level of aerobics, teens should try many different kinds of sports. Ability of the neuromuscular system is at it's best at this lifestage and it is easier to learn new skills.

TWENTIES. Engage in an average level of aerobics and sports. However, because muscle mass begins to decrease without exercise about age 25, weight training is highly recommended.

THIRTIES. In addition to emphasis on aerobics, exercises that strengthen abdominal muscles should be maintained to prevent lower back injuries. Some sort of flexibility exercises should be done every day.

FORTIES. Engage in a vigorous aerobics exercise program. Incorporate stretching and flexibility exercises. Focus on muscle strengthening exercises.

FIFTIES & BEYOND. Take part in an aerobics program. Also weight training exercises that emphasize low weights and high repetitions is highly beneficial.

Importance of Teen Years

I believe that it is very important for schools to have quality physical conditioning programs which emphasize development of good neuromuscular skills for students who do not take part in sports. Studies show that youth in the U.S. are in poor physical condition. Inactivity is a major problem in the U.S.

The President's council on Physical Fitness reports on the poor fitness capacity of today's youth. "Perhaps the most serious (physical fitness) failure involves children. In 1984, the Department of Health and Human Services found that only 36% of children aged 10 to 17 had daily physical education classes available to them... Only one state--Illinois--requires daily physical education classes for children." (American Health, Oct.,1989, p.31.)

While some students participate in sports and are in good physical condition, in contrast, the majority of students are not fit. Many do not participate in any physical activity. These students grow up to be sedentary adults.

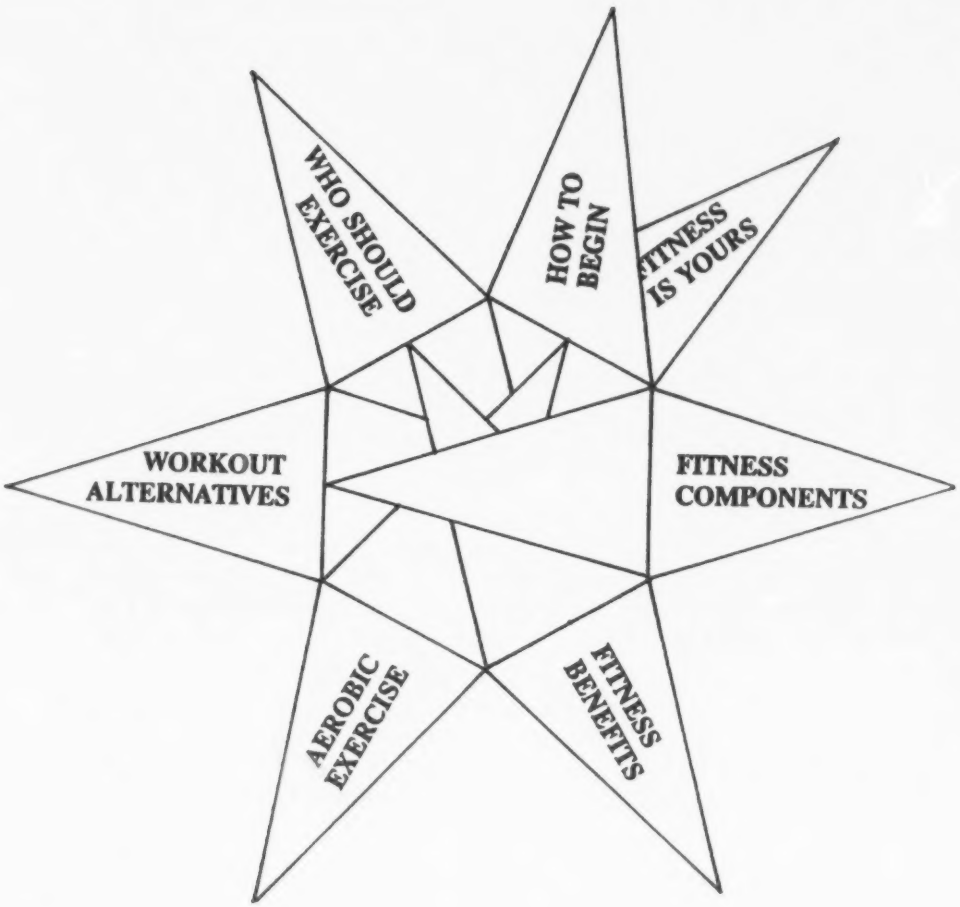
The underlying problem, I believe, is one of attitude. Nonactive students lack confidence to participate in a sports program because they feel awkward, uncoordinated, and lack the necessary skills required in sports. These attitudes carry into adulthood. Nonactive students could greatly benefit from general, physical education kinds of activities that result in a healthy lifestyle carried into the adult years.

GET CLEARANCE IF NEEDED!

If you need to get medical clearance from your doctor, as outlined in this Chapter, do it! Devise an exercise program prescribed with your physician's advice. If you do not need clearance, you are ready to begin and may plan your program as discussed in Chapter 7.

YOU CAN DO IT!

7. HOW DO YOU BEGIN AN EXERCISE PROGRAM?



7. HOW DO YOU BEGIN AN EXERCISE PROGRAM?

Now that you have resolved to begin an exercise program, you have some other decisions to make. *First, examine and set your overall goals, and then choose a realistic activity to help you reach you goals.* Determine how to work out, i.e., in a group or alone; allocate a time conducive to your schedule, working out at least three times a week; and choose where you will exercise. Here are some considerations to help you make your decisions.

GOAL SETTING

Ask yourself the following questions to help identify your initial goals.

At the present time, what do you want to get out of fitness in both the short and long run? Is your purpose in engaging in a program to promote your general health? I hope so, because this should be a goal pursued over a life time--the long run goal. What physiological benefits do you want to gain from your program? You probably have specific objectives which might include losing weight, firming up and strengthening your muscles, developing cardiovascular fitness, preventing coronary heart disease, preparing for some other activity you love (i.e., skiing), improving in a sport (maybe biking or running in competitive races), participating and improving in an activity without becoming exhausted, slowing the aging process, getting off cigarettes, or cutting down on stress.

You can reach any--or all--of these goals but remember that (l) it will take time because the body cannot be changed quickly and (2) it is better to become fit gradually to prevent injury, burnout, or both. When behavior is changed gradually, you develop habits that stick.

Lorna Francis (IDEA Today, May, 1990, p. 19-21) offers a SMART approach for developing sound personal exercise goals and emphasizes that the goals cannot be vague; i.e., "I want to get fit." SMART is an acronym for setting goals that are specific, measurable, action-oriented, realistic, and timed. For example, a specific goal is to improve body composition by losing a determined number of lbs. of body fat; a measurable goal is to measure fat level now, determine how much fat weight to lose, and measure again in three months and at intervals after until the goal is attained; an action-oriented goal is to write and follow specific and realistic plans that include short and long term goals; a realistic goal considers such factors as bone structure, personal preferences for exercise, the adaptability of program to lifestyle, and facilities availability for the chosen weight loss exercise program; and a timed goal would be to set a realistic time frame for the weight loss goal. The SMART approach is further detailed in If It Hurts, Don't Do It (Francis, Peter, Ph.D., and Lorna Francis, Ph.D., Prima Publishing, 1988).

Art Turock, in his Chapter 6 of Getting Physical, provides a terrific plan for setting goals and monitoring progress. (See abstract in the Appendix.)

When considering your goals, be sure to identify any obstacles you will encounter in reaching these goals. Whenever you implement anything new, there is always some resistance. For example, if your partner objects to your exercising, this will be a barrier. First, you'll have to convince the partner (and other family members) of the importance of your goals. Then try to set up a schedule with as little disruption to others as possible. If your family likes junk food and

you want to introduce healthy fare, you will meet with resistance when you introduce new foods. Make a list of all these resistance factors. Then, determining how to overcome hurdles will result in setting up a realistic fitness plan.

Look ahead to the future and realize that your goals will change as you become more involved in fitness. Your fitness awareness develops and increases. There will be a natural inclination after reaching your goals to pursue and develop new ones at higher levels. This is the exciting thing about getting into exercise from the standpoint of a lifetime--you keep getting better.

YOUR UNIQUENESS

When setting goals, remember your uniqueness in terms of body structure and physical capabilities. We are born with a certain body type. Simplified, there are three body types: **ectomorph** (tall, slender, long-limbed, and small boned; **endomorph** (pear-shaped with heavy hips and thighs, and small to medium boned) and **mesomorph** (hour glass shape with broad shoulders and hips, and medium to large bone structure). Although body type doesn't change, it can be greatly improved and enhanced through proper exercise and diet.

It is better **not** to set up some kind of artificial image of another person that you want to look like, in terms of fitness, such as, "As a result of my fitness program, I want to look like Jane Fonda." Genetics play a major role in body shape and your body build may be quite different from another person's. Be pleased with your own body build and work toward improving that. It is guaranteed that if you work toward fitness your body shape will improve and you will feel good about being YOU.

ACTIVITY CHOICES

Choosing an activity depends upon a variety of factors involving your general health condition, age, interests, skill levels, and availability of activity in your community. Selection should target first of all on gradual progression--pre-conditioning, initial, developmental, and maintenance conditioning--and also on injury prevention, convenience, and enjoyment.

Pre-conditioning.

If you have been sedentary for a long time or have any of the limitations listed in Chapter 6 (pp.58-60) consider a pre-conditioning program for approximately six weeks (with your doctor's approval). This can be a walking program or structured program offered at some center. Taking this short amount of time to "prime" your body will pay big dividends in the long run. Choose an exercise program with low injury rates (walking, swimming, low impact aerobics) so you can continue in a lifetime program.

Choose an Activity that you like.

Research shows that 50% (or more) of individuals who begin an exercise program drop it within six months. Why? Among reasons for this large drop-out problem, a major one is that exercise is not viewed by the dropouts as fun or enjoyable. Different people prefer different forms of exercise and have different views of what is or is not fun... depending on the exerciser's interests and personality. You need to be excited about what you do! Fun is the key to your passion for the activity.

The solution? One way to think of a physical activity as fun is to recall physical activities you enjoyed in your early years. Were these skating, swimming, or hiking? Did or do you

like to be indoors or outdoors? Do you like activities that can involve your family or a group, or do you like to work out alone? Do you like competitive games? It's important to choose an activity that you like because you will enjoy it while getting benefits at the same time, and it will lead to exercise adherence.

Zen philosophy emphasizes the enjoyment that comes from the process of doing and being totally involved with the activity itself, not the end reward. It emphasizes the fulfillment of "being in the moment." Although at first it may be difficult for you to engage in exercise from this perspective, choosing something you like may lead to feeling good about your body performing movement and you can enjoy each workout.

There is a strong connection between the mind and body. When your mind keeps reinforcing the body that an activity is fun, you will look forward to exercise, and the activity itself becomes an intrinsic reward. Studies show that feelings of enjoyment and well-being from exercising are strong motivators for exercise adherence.

Choose an Activity that Coincides with Your Skills.

Some activities require a certain amount of skill before you can get aerobic benefit from them. For example, for swimming to be aerobic you need to already have a certain skill level--you need to be able to swim one quarter to one-half mile of front crawl without stopping (i.e., for 20-30 minutes without stopping). This would be very difficult for the poor swimmer to do. Water programs that are aerobic and that do not require swimming skills are taught at different centers and would be a good alternative for the non-swimmer. In contrast, if you were good at biking in earlier years, you may want to take it up again.

If you have never been active in sports and have no "acquired" athletic skills, you may want to start out walking or in a beginning aerobics class or use an aerobic exercise machine which require relatively little skills. Choose an activity that you feel sufficiently confident so that you can continue to feel good after each workout, not apologetic because you were uncoordinated or could not keep up.

Choose An Activity that Provides the Desired Cardiovascular Benefit.

Several books evaluate common activities with estimates of their cardiovascular benefits. By knowing each activity's contribution, you can make wiser decisions concerning the structure of your training program. I previously mentioned that K. Cooper rates aerobic activities, giving highest ranking to cross-country skiing, followed by swimming, jogging or running, outdoor cycling, and walking. (See Chapter 4, pp. 40-41 .)

Garrick (Chapter 3, p.73-106) lists exercise options, describes physical benefits derived from each activity, and outlines advantages/ disadvantages of each. Activities covered include running, swimming, walking, cycling, rowing, cross-country skiing, exercise using machines, videos, fitness facilities, and aerobic exercise. (Garrick, James G., M.D. and Peter Radetsky, Ph.D., Be Your Own Personal Trainer, Crown, 1989).

Other activities to choose from include rowing, racquetball, hiking, karate and other marshall arts classes, skating, circuit weight training, aerobic dancing, aerobics, handball, and squash. Chapter 8 lists types of aerobic classes, and Chapter 9 lists activities for working out on your own.

Although some exercises are rated to give the best overall aerobic conditioning, there is no

"one right" exercise activity. The activity you choose should consider present health status, age, activity level, interests, skill level, and convenience, **and** meet the F.I.T. formula.

If just beginning, you can choose any of these exercises and later decide which would be best for you to proceed with in regard to cardiovascular benefits. Any of these activities, if pursued at the proper intensity, frequency, and amount of time will help you to develop your cardiovascular endurance. What's important now is to get started.

Choose A Time and Place which are Convenient for You.

Since you undoubtedly have a busy daily schedule, you will have to plan to free up time for fitness and perhaps rearrange part of your schedule. Remember, though, that exercising makes your body more efficient. In the long run, you will have more energy and accomplish much more in your daily life.

Choose a time when it is convenient for your schedule to workout. If you have small children, it may be easier for you to work out early in the morning when your spouse will be home to watch the children. If you are working away from home, it may be easier for you to exercise for one hour at lunch or immediately after work. Choose a time when you can always, or nearly always, workout. Convenience is a key factor to staying with a program. If you exercise at the same time everyday, it will become a habit. In regard to a certain time, Cooper mentions that if you exercise at the end of a high pressure day, aerobic activity can help relax you and dissipate the stress you feel, and even energize you. If you have a high stress job you might consider working out before dinner. (K. Cooper, p. 191).

He also suggests that exercising at the end of the day suppresses the appetite and enhances weight loss, so if weight loss is one of your goals, you might want to consider exercising later in the day. (p.34) On the other hand, some people find that if they work out later they have difficulty sleeping because the exercise tends to stimulate them.

Some research shows that there is greater adherence to a program when exercise is performed in the morning.

Clearly, the time you choose is a highly individual matter. In any event, select a time for your exercise and stick to it. If you want exercise to be a habit, you must make it a habit.

When you begin a program at a center, choose one close to your home or work place so that you will not have to drive excessive miles to work out. Time is very important to each of us, and the less time spent in transit the better. If you have no close-by alternative and must drive farther, you might think about getting a few motivational audiotapes related to health and fitness and listen to those on your way to and from class.

If you have not decided upon an activity, you might locate a copy of the August, 1987, issue of Changing Times (pp. 38-56) which contains a special section that includes guidelines to fitness. A section on how to choose indoor and outdoor workouts includes information on the cost and equipment needed and injury likelihood for various activities. References are given for listed activities. A chart illustrates the benefits and costs of each activity in regard to cardiovascular fitness, strength, muscle endurance, and flexibility.

The issue also presents guidelines for choosing a health club, stating that you first need to decide on your goals and then identify what you expect from a club. The

author mentions that it is often possible to sign up for a trial membership for a week, to determine if the club meets your needs. Information is included on assessing the staff, costs of joining, and contracts you will sign. Be aware that some centers offer optional aerobic "drop in" class rates with no need for annual membership or initiation fees. (For further discussion on health clubs, see Chapter 9, pp. 105-106).

GUIDELINES FOR SAFE AND EFFECTIVE TRAINING

Whether you work out on your own or join a class, there are a few training rules you need to follow to avoid burnout and injury.

1. **Get in shape gradually.** Exercise places stress on your body--your cardiovascular system, muscles, ligaments & tendons, and bones. Go slowly and give them time to adapt. For every year you have been out of shape, it will take approximately one month of exercising to get back in shape.

2. Anticipate that you may have a feeling of disorientation when you begin a new exercise program. James Gavin states, "Committing to exercise represents a major life change... people new to fitness typically experience a kind of identity crisis." When the exercise environment is new and strange to you, you may feel inadequate or intimidated. This is a natural phase that will pass when the surroundings become more familiar and your body accommodates to the exercise. (IDEA Today, Nov./Dec., 1991, pp.36-43.)

3. At first, **expect some discomfort, stiffness, and soreness.** When you begin you may feel a bit uncomfortable and sore . If not used to exercising, during the first two or three weeks expect to have some muscle soreness after exercising. Physiologists are not certain of the cause of muscle soreness, but theories suggest it might be caused by small tears in muscle fiber, or muscular spasms which reduce blood flow, or overstretching of connective tissues. (Fox, p.99.)

The body seeks to maintain equilibrium and does not consider whether something, like exercise, is good for us. (For example, although it is good for the body when a person quits smoking, a body conditioned to nicotine craves it.) Soreness is the body's way to maintain the sedentary status quo, even though being inactive is bad for us. Be aware of the body's homeostasis and the way it works! Don't let soreness discourage you from exercising. When your body has adapted to exercise, muscle soreness will gradually dissipate.

In discussing his "laws of nature" regarding movement training, Millman states the law of accommodation. "Any change requires an initiatory period of discomfort until the body adjusts to the new demand. Pain is a sign that the body is readjusting, and pain will pass." He formulates that the first 3-4 weeks are the initiatory period, and that it may take 3-6 months before stabilization. Further, that because of the law of accommodation, the participant will need to be motivated to stay with the activity. (Millman, p.78.)

Editors Golding, Myers, and Sinning give advice for preventing muscle soreness. They suggest that exercisers use a conservative approach by beginning with a proper warmup, gradually increasing the workload during exercise, maintaining appropriate exercise intensity, slowly increasing the amount of exercise performed from workout to workout, not overdoing a given exercise, gradually decreasing exercise intensity at the end of the workout, and avoiding bouncing when stretching. (Golding, Lawrence A., p.58.)

4. **Develop body awareness.** Be aware of how your body feels each time you exercise, i.e., is it tight, flexible, sore, and so on. Your physical condition will differ from workout to workout depending on previous activity (or inactivity), over-activity, your wellness, or if you have been ill or on vacation. Recognize and respect your body's confines. You should never feel the "ouch" kind of pain when you exercise.

5. **Exercise at your own level.** Don't compete. You are unique in regard to your current health condition, age, skills, and so on. Start at a safe level and progress gradually. If competitive by nature, compete against yourself. For example, keep records that show your rate of improvement.

6. **Be conscious of using good posture and body alignment throughout exercise.** Cailliet (pp. 54-120) tells how to check and improve your posture. His book discusses the importance of good posture, physical problems associated with poor posture, ways to measure posture, how to regain good posture, and gives specific exercises to improve posture. Illustrations accompany the text.

For example, one of the exercises to determine good posture is to stand against a wall with heels six inches away from the baseboard, push the lower back against the wall, and try to place the head flat against the wall. Then, check the distance between your neck and the wall. With good posture, the distance will be no more than three fingers width from the wall. (Cailliet, p.65.)

Another good book includes a chapter on posture: The Canyon Ranch Health and Fitness Program (Simon and Schuster, 1989, pp. 111-116. The chapter includes a posture rating sheet and provides posture improvement tips and exercises.

7. **When beginning an aerobic exercise program, don't work out every day using the same routine** (if you are working at 60% or above your THR.) Initially, work out three times a week. After you have adapted to your exercise program, and want to exercise more often, choose a different activity, such as walking or swimming if you regularly do aerobic dance, for example. After your body adapts to exercise, you can begin to work out more frequently. Always alternate a hard day with an easy day so your body can recover.

8. **Understand the overload principle of conditioning and apply it in an intelligent, gradual, and progressive manner.** According to physiologists, the overload principle (one of progressive adaptation) is that to improve your fitness level you need to place greater than normal exercise demands on the body. To train the body, you exercise at a level above the usual--at a rate allowing for adaptation. Your body adjusts to the new circumstances, and then functions more efficiently. When starting fitness, a small amount of work may be a significant overload; as you progress, a greater amount of work is added. After your cardiovascular system and muscles have gradually adjusted to the requirements you placed on the body (i.e., after you feel comfortable in your present aerobic exercise), you can increase the work load. Using the FIT formula (Frequency, Intensity, Time), increase the load by adding only one of these three fitness dimensions at one time--never all three at once. For example, if you work out longer, don't increase frequency or intensity until your body has adapted to the longer workout. Progression in exercise--the rate at which overload is applied--is discussed in the next section.

9. **Be Aware of the Specificity Principle.** Conditioning your body in one activity does not specifically condition it for other activities. For instance, conditioning through cycling will

not condition your body for running races. Conditioning your body through weight training will not condition it aerobically. Why? Because metabolic and physiological systems adapt to the specific type of activity and the overload imposed on that activity. There is some aerobic transfer between cycling and running, but not as much as you might think.

There are over 600 muscles in the body. When you train for a particular physical activity, you condition muscles specific to that activity, to achieve the desired performance. McArdle notes that "Specific exercise elicits specific adaptations creating specific training effects." This is the specificity principle. (McArdle, p.349.) Why should you be aware of this? Because as you progress to an intermediate phase of a given activity, you may realize that you are in good shape in that activity. You may want to challenge yourself and perhaps try a new activity. If so, you need to gradually and properly train for the new activity to avoid injury (and disappointment, disillusionment, and frustration).

10. **Be Consistent and Committed.** Loehr and McLaughlin say it well when they advise us to be committed to a goal and, once committed, give it all the strength you have. (Loehr, pp.78-82.)

11. **Other Suggestions.**

When you are sick, avoid vigorous exercise. Viruses attack and damage cells. Your immune system works to full capacity when you are ill, and your body needs to expend a lot of energy just to repair cells. Give the body time to recover. Physicians advise against exercising when you have a fever.

Be careful about taking hot showers or soaking in saunas or hot tubs right after exercising. Wait until you have cooled down completely, then take a quick shower at a moderate temperature. (Avoid them altogether if you have arteriosclerosis or cardiac problems.)

ACSM's RECOMMENDATIONS FOR PROGRESSION IN EXERCISE

When do you apply the overload principle and progress in fitness? Overload is applied at a rate that allows for adjustment to take place. There are no hard and fast recommendations when it comes to rate of progression. For some people it may take several weeks longer than others. For example, persons with low fitness levels and/or older person's bodies usually adapt at a slower rate. Conversely, a fit and/or younger person usually adapts quicker and advances to the next stage.

To improve and progress, you need to sensibly and gradually increase the type of stress variables (i.e., Frequency, Intensity, and Time), affecting one variable at a time. Advising that it depends on the participant's exercise adaptation, ACSM (p. 107-110) stresses the importance of individualized exercise prescription and monitoring. Based on exercise progression research, ACSM recommends that normal adults progress through three stages, allowing the number of weeks for each stage to vary by individual. Each person is different and many factors contribute to exercise adaptation. The type of activity, intensity, duration, and frequency at which you work out, and your exercise progression depend upon your fitness and health status, age, skills and abilities in the fitness area, exercise opportunities, and other individual factors.

The following chart is a simplified adaptation from ACSM guidelines and Nieman, pp.189-191.)

Table 3: Recommendations for Progression in Exercise

STAGE	# OF WEEKS	ACTIVITIES
Beginning (starter program)	usually lasts from 4 to 6 weeks.	Low-level aerobic activities and stretching to condition connective tissue and joints and to prepare for continuous aerobic exercise in the next stage.
Improvement (period of greatest improvement.)	Usually lasts from six weeks to 6 months.	Continuous aerobic exercise in which intensity, duration, and frequency increase gradually.
Maintenance	After 6 months.	Continuous aerobic exercise activities to maintain fitness gained in the improvement stage. Add varied high interest aerobic activities to your program to satisfy your needs and motivate you to continue.

Many of the abstracted fitness and health program books offer a structured way for exercise progression in a gradual, logical sequence. (See K. Cooper, Kusinitz and Fine, Simon, and Sharkey.) These books provide model walking, jogging, cycling, swimming, and other programs with step-by-step instructions for improving fitness. Sample programs include testing for fitness level; beginning phases for those in low fitness categories, which introduce you to exercise gradually until you adapt; intermediate phases in which you focus on fitness activities that help you exercise within your target heart rate; and high level fitness categories. Daily and weekly schedules are outlined, along with instructions on the duration, frequency, and intensity to work out, and other information.

WAYS TO MEASURE YOUR PROGRESS

ACSM reports that those who participate in an appropriate exercise program can expect to see the greatest cardiovascular improvement within the first six to eight weeks (p.96).

Measuring your progress several times during the first year lets you know how well you are advancing toward your fitness goals. Improvements you have made will help motivate you to keep exercising and give you some good information to appropriately modify your personal program.

If possible, have a fitness test prior to beginning a program, record the measurements, then assess your improvements about every three or four months for the first year. You will want to compare earlier and present measurements of your resting, recovery, and working heart rates; body weight and composition; flexibility; and muscular strength and endurance. (A lower resting heart rate indicates improved fitness. When fit, your heart rate slows down and beats more efficiently.)

Informal ways to measure progress include keeping a diary or log of your workout activities. Your log documents your success. You will see that you are exercising harder, for longer time periods, and more days per week. If you are walking, jogging, or participating in an exercise program involving distance, do a timed test after the beginning period of 5 or 6 weeks and then at 3 or 4 month intervals.

Another way to see your advancement is to take a before and after picture so you can visually see the results of your efforts. You might also do a personal inventory asking

yourself questions. For example: what other physical activities have you been able to do and in addition to the initial one?, i.e., to your walking have you also added some toning work? How do you feel after a workout now compared to when you started? Can you handle more chores now without tiring? Use your creativity to identify other advancements in your life due to the effort you have put forth, make a list of these, and get it out whenever you feel like skipping a workout or feel discouraged. Improvement motivates.

DETERMINANTS OF PHYSICAL ACTIVITY PARTICIPATION

Who are the people most likely to make exercise a habit? In a consensus statement on exercise, fitness, and health, Bouchard and others note that "Those who are active tend to be self-motivated and possess self-regulatory skills: setting personal activity goals, planning to reach them, minimizing environmental barriers to implementation, and monitoring and reinforcing their actions." (Bouchard, p.9.)

COMMON CAUSES, TREATMENT, AND PREVENTION OF INJURY

Overuse/overstress is often a cause of injuries. Beginners may tend to increase intensity, frequency, and duration of exercise too rapidly. Overused muscles and connective tissues react to stress by shrinking and tightening, making them prone to injury.

Physiologists attribute other causes of injury to include hyperextension of joints; improper technique, poor body mechanics, form, body alignment, posture, and flexibility; lack of stretching; inadequate strength and/or skills for a particular activity; muscle imbalance; structural abnormalities (flat feet, unequal leg length); lack of adequately conditioning the muscles and tissues to make them resistant to injury; chronically tight muscles and inflexible joints; improper shoes that do not provide shock absorption or stability; poor floor surfaces; inadequate warm up/cool down procedures; exercising too intensely; progressing too rapidly in an exercise program; fatigue; performing exercise in a class too advanced; and ignoring aches and pains.

Immediate treatment for overuse may be rest, ice, compression, and elevation (RICE), or require rehabilitative measures. (Remember, though, that inactivity results in muscles shrinking and becoming flabby and bones and ligaments becoming weak, thereby making them susceptible to injury).

There is much the beginner can do to avoid injuries! Use good posture, don't lock your joints when engaging in exercise, make stretching part of your regular routine, work all muscles to maintain muscle balance, gradually prepare (pre-condition) your body for workloads, purchase good shoes for the exercise you have chosen, always warm up and cool down, and follow other suggestions in this book.

The beginner needs to work within his /her body limits and gradually progress in fitness levels. Take a moderate approach to fitness.

For the average individual, potential risks are associated with certain exercises. Some that you should avoid, even though they are sometimes safely done in gymnastics and yoga classes, are the following:

. Straight leg sit ups--cause intervertebral disk pressure;

. Deep knee bends--put pressure on knees.

. Full neck circles and plough (lying on back with legs overhead and parallel to floor)--put pressure on cervical disks.

. Back hyperextension (stretching backward more than the normal range of motion)--puts pressure on disks.

To prevent both recurring and new injuries, it is important to recognize how the injury occurs/occurred. Simon notes that "the first signs of an injury may be extremely subtle." Questions to ask yourself might include: What were the early warning signs that occurred and did you ignore them? Were you fatigued? Did you mistake pain for normal aches that sometimes accompany exercise? Was the injured area stiff at the time? Did you hear noise(s) before or when the injury occurred? Did you have decreased mobility? (Simon, pp.250-251.)

Although many minor injuries heal themselves without medical supervision, it is sometimes prudent to seek medical help. Mirkin and Hoffman present six rough guidelines for when to consult with your physician or a sports medicine specialist about an injury.

> (1) all traumatic joint injuries (i.e., caused by a fall or pull);
> (2) injuries that seem to be accompanied by unusual, severe pain;
> (3) joint or bone pain that persists for more than two weeks;
> (4) any injury that does not heal in three weeks;
> (5) any injury you are intuitively concerned about;
> (6) any infection accompanied by pus, red streaks, swollen lymph nodes, or fever.

(Mirkin, Gabe, M.D., and Marshall Hoffman, The Sportsmedicine Book, Little, Brown, and Co., 1978, pp.93-94.)

AFAA advises seeing a physician when "pain from a sudden injury is accompanied by considerable swelling and/or loss of function, and when pain comes on gradually and persists longer than 10-14 days despite a reduction of the activity and use of local ice and aspirin." (AFAA, p.154.)

The rehabilitation process needs to be approached sensibly. Simon advises that "rehabilitation should begin as soon as the early acute damage subsides...to restore previous motion and strength." He advises three days of rehabilitation for each day of exercise missed because of the injury. On a positive note, he says that you can gradually build yourself up to be stronger than before with persistence and patience. (Simon, pp.252-253.)

Four books that address injuries are:

Your Injury: A Common Sense Guide to Sports Injuries. (Ritter, Merrill A., M.D., and Marjorie J. Albohm, Benchmark Press, Inc., 1987.) The book presents general advice about injury identification and handling. The major portion describes common injuries in specific parts of the body. Information is included on actions to solve the problem, actions to avoid, and modifications to promote healing.

Complete Guide to Sports Injuries: How to Treat Fractures, Bruises, Sprains, Strains, Dislocations, Head Injuries. (H. Winter Griffith, M.D., The Body Press, 1986.) It consists of charts of injuries that include general information (definition, list of body parts involved, signs and symptoms, causes, risk increases, how to prevent); "what to expect" information (appropriate health diagnostic measures, possible complications, probable outcomes); care and treatment information (first aid, continuing care, medication activity, diet, rehabilitation, and when you need to call your doctor). For each injury, related body parts are listed and illustrated.

The Athlete Within: A Personal Guide to Total Fitness. (Simon, Harvey B., M.D., Steven R. Levisohn, M.D., Little, Brown & Co., 1987.) (See abstract section.) The book includes an excellent section on sports medicine which focuses on the prevention, recognition, and treatment of common athletic injuries.

Be Your Own Personal Trainer. (Garrick, James G., M.D., and Peter Radetsky, Ph. D., Crown, 1990.) Garrick, from his perspective as a sports medicine doctor, tells and illustrates how to recognize and rehabilitate previous injuries that may hinder progress in a fitness program unless corrected. (His Chapter 2, "Getting Balanced," p. 33-72.)

PATIENCE, PERSISTENCE, AND POSITIVE THINKING.

In Chapter 8, I discuss how to begin a program in a class, and in Chapter 9, how to begin a program on your own. Whichever you do, you need to be patient, persistent, and think positively.

(1) Patience. You need to be patient about reaching the level of fitness you desire. It might take a while (sometimes weeks, months), depending on your physical health) before you really begin to enjoy your activity or recognize large fitness gains and health improvements to your body. Determined doggedness may be the only way to get through the first six weeks of an exercise program. Remember that every time you work out you're improving what you can and cannot see and feel--internally and externally. It takes time to burn fat and firm up muscles. Benefits will soon be evident in the way of more energy, vigor, appearance, and health.

Patience is hard to come by these days in which all are pressured by time constraints. Dr. Borysenko discusses being patient as living in the present moment by maintaining mindful awareness (p.211; see abstract in the Appendix). Unfortunately, hurrying up exercise has been prevalent in fitness. Many don't take time to stretch, for example, and only want to do "fast" exercise. The solution? Exercise must be incorporated into your life, not as a "dosage" to be prescribed, but as a desired, essential, beneficial, ongoing, unhurried part of your life.

Two articles in the American Health magazine address how American lifestyles and "paces" tend to be obsessed with speed, impatience, and anxiety and how it is important to slow down and be patient to prevent sickness such as heart disease and high blood pressure, among other maladies. (American Health, March, 1989, p. 76-82).

When you make fitness one of your life time goals, remember that you don't have to have instant results. You have the rest of your life to pursue fitness, and improvement will soon be there. And you can keep it there.

(2) Persistence. Persevere; don't let other activities or work keep you from exercising three times a week. Get up earlier if something during the day is going to interfere. Only you can make this happen by your determination. Research shows that if you can stay with your exercise for five months, you will more likely make it a lifetime program. Dr. James Rippe emphasizes "the key to cardiovascular fitness is consistency rather than intensity. And the sooner Americans incorporate this idea into their exercise regimens, the healthier--and fitter--they will be." (Readers Digest, March 1989, p. 139.)

(3) Positive Thinking. All that you have read about the benefits of exercising should help you to keep a positive attitude about it. Tell yourself all of these things when your energy begins to wane, and keep going when feeling

low on energy. Use a little "self-talk", i.e., "I enjoy getting the benefits of exercising, and take pride in my persistence." Tell yourself that you are getting better...for you will be. Visualize your short and long term goals. See yourself accomplishing your goals.

Reading books about fitness motivates me to adhere to a healthy lifestyle. Most of our daily associates and companies do not practice healthy habits, and we don't want to appear to be "Pollyannas" about maintaining our health, or to be a bore. However, reading about athletes and others who are following a quality lifestyle serve as models, helping us to feel like we are in the company of others who are striving toward good health goals. I mention the following three books offhand.

The Ageless Athlete (Richard A. Winett, Ph.D., Contemporary Books, 1988). He portrays 17 masters athletes--swimmers, runners, discus throwers, race walkers, body builders--analyzing their sports-specific training programs, workout routines, and motivational strategies.

Winett notes several commonalities among these middle-aged athletes. They are highly focused and channel their energies to meet their goals; have drive, determination, and perseverance; are authentically involved in a sport suited to them emotionally and physically; have high personal standards; are committed to goal setting, and plan and set hard but reachable goals; carefully chart their progress; create an optimal environment to reach their athletic goals; and view training as a high priority. It is not surprising that these men and women are also successful in other areas of their lives because these attributes are necessary for accomplishment and success.

The Way of the Peaceful Warrior (Dan Millman, H. J. Kramer, Inc., 1980). This is an autobiographical novel telling how a world-champion gymnast trains his body, mind, and emotions.

There are many other sports-specific books to keep us interested in working out. For instance, for swimmers, John Jerome, in Staying with It (Viking Press, 1982), traces his pursuit of a national championship in swimming (in his late forties) and sets down what he learned in the process about what an athlete is and does.

It also helps if you can find a device to motivate you to continue, if needed. This might be rewarding yourself intrinsically with time to do something else you like, (i.e., "after I work out I'll reward myself with an hour to read a book I've been wanting to read." Or reward yourself with something extrinsic--"I'll buy that new leotard after I have exercised faithfully for three months." (If you want to lose weight, don't use food to reward yourself, unless it's low in calories and fat.)

ADHERENCE TO EXERCISE

Adhering to your exercise can be helped by knowing two things: (1) if you stop, you lose your fitness (the "reversibility" factor); and (2) there are techniques which make it easier to regularly sustain your program.

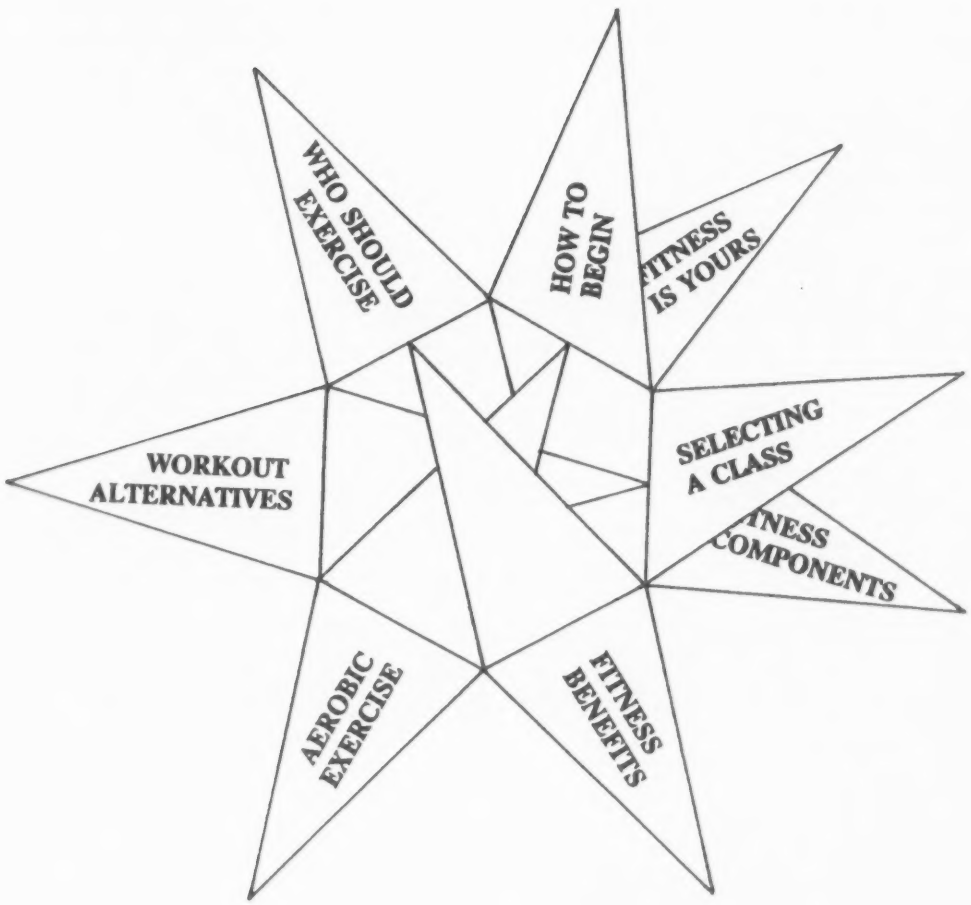
To stick to your exercise program, you need to know about the **reversibility** conditioning principle. The reversibility principle means that when you stop exercising you start rapidly losing the gains you previously made. McArdle (p. 350) notes that "beneficial effects of exercise training are transient and reversible." Further, that "after only two weeks of detraining, significant reductions in working capacity can be measured, and many training improvements are lost within several months." (McArdle, 1986.)

If you have a difficult time sticking to exercise, you might want to scan an article by Dr. James Rippe in which he gives 29 tips for staying with exercise. (American Health, June, 1988 p. 43-46). Art Turlock's book, Getting Physical: How to Stick with Your Exercise Program, is an excellent book to help you stay with exercise and enjoy it. (See abstract in the Appendix.)

Stick with it.

YOU CAN DO IT!

8. HOW DO YOU SELECT, EVALUATE, AND GET THE MOST FROM YOUR FITNESS CLASS?



8. HOW DO YOU SELECT, EVALUATE, AND GET the MOST from YOUR FITNESS CLASS?

As I discussed in Chapter 5, pp. 45-46, I believe that for the beginning exerciser there are a number of advantages to working out in a class, in contrast to working out on your own. In a class, it is easier to stay motivated, you receive instruction, and become better educated in fitness and related matters.

But the class you choose needs to be the "right" class for you. Key factors which will help you select the right class, and get the most from it, are:

- o Choosing a program that helps you meet your personal goals;
- o Making "doing the fitness activity" come first in your selection;
- o Selecting a class at the proper ability level;
- o Determining the various kinds of classes from which to choose;
- o Verifying that a class has proper content and structure;
- o Evaluating the class; rating the instructor;
- o Getting the most from your class;
- o Committing yourself to exercise.

CHOOSE A PROGRAM TO MEET YOUR GOALS

After you have identified your health and fitness goals, you should consider getting into an organized aerobics program which will help you reach these goals. If you are just beginning and have a limited amount of time and money, I recommend that you start with a modest program--which will help optimize the time spent and will not entail spending a great deal of money--at your local city recreation program, YMCA, or private center which offers drop-in or punch-card aerobic classes. These are good places to start. You will not extend yourself either financially or physically, and will give yourself a chance to "feel out" a fitness program. After you have been in a program for several months, you might then consider a change if you feel that you would benefit from it.

PUT "DOING THE FITNESS ACTIVITY" FIRST IN YOUR SELECTION

Don't get caught in faulty thinking about fancy club facilities or now-and-then workouts when deciding what kind of a program to join. Don't think that you have to go to an elaborate facility with every feature and expensive equipment, or have to wear fashionable workout attire. In short, don't think of fitness as something that you "buy" or can acquire by identifying with a "fabulous" club.

Instead, choose a convenient location so you can work out without having to drive excessive miles. (Example: Someone told me that she belonged to one of these clubs "with marvelous facilities," but the conversation revealed that she had not worked out in over two weeks because the facility was quite a distance from home and it was not convenient to get there.) Sure, it's okay to belong to one if you prefer, as long as your foremost concern is consistent exercising, and you carry through. But all the trappings of wearing wonderful leotards and belonging to a lavish club are not relevant to the actual accomplishment of being in good physical condition.

You can't achieve or maintain fitness on an irregular, now-and-then basis of exercising. To become and stay fit you need to exercise

at least three times a week. Fitness and respect for being fit are a result of regular, ongoing workouts. Remember that you might work out occasionally and pretend to be fit, but people who understand fitness will be able to tell whether or not you are fit. You won't reap the health benefits and energy gains you get from a consistent regimen. Results from such tests as treadmill tests with a physician, as well as other medical tests, also tell the real story.

SELECT A CLASS AT THE PROPER ABILITY LEVEL

Start at your proper ability level--pre-condition, beginner, or intermediate. Choose a class that stimulates but does not totally exhaust you. Here it is important not to let your ego get in the way of making a decision about whether to join a beginning or intermediate class. If you are not sure, try the beginning class. If you feel best at that level, stay there for a few weeks. You can always move up to a higher level later. If you feel that you did not work hard enough, try the next higher level class the second time or modify the workout. Avoid the macho image or macho motivation--which are incongruent and counterproductive to aerobic activity.

To get fit, people who have not participated in aerobic activity need to (l) train their cardiorespiratory system and (2) condition their muscle and skeletal system. Lorna and Peter Francis point out that the cardiorespiratory system adapts to exercise faster than the musculoskeletal system. This is significant because motivated participants tend to want to progress rapidly and push themselves too quickly. When the musculoskeletal system has not yet adapted to meet demands of stress that exercise place on it, an overuse injury may be the end result. (Dance Exercise Today, v6, #2, March, 1988, p.23.)

The above authors present the following four levels of cardiorespiratory fitness along with suggestions for appropriate entry class level.

Level	Times per Week (Frequency)	Intensity (HRR)	Aerobic Duration Per Session (min.)
Pre-Aerob	Less than 3	Low intensity	- -
Beginning	Less than 3	Less than 65%	Less than 15 mn
Intermed.	3-4	65% - 75%	15-30 min.
Advanced	5 or more	75%	30 min. or more

CHOOSE FROM A VARIETY OF CLASSES

City recreation and YMCA centers publish programs listing fitness classes in a special section of their program guides. Call or personally contact private centers, speak to someone who is knowledgeable about the programs, and ask about offerings. Recognize that a variety of styles are available to you. For example, some aerobics classes are high impact, others are low impact, and some use weights to intensify the workload. Programs may include the following classes:

Pre-conditioning programs--- help the unconditioned, sedentary person prepare for a regular aerobics class. (See pp. 37-38, 60, 68 for more information on the content of these classes).

Low Impact Aerobics---provide aerobic benefits without jumping, jogging, or other jarring movements. The class emphasizes constant arm movements, with arms shoulder height or higher. It includes dance/walk combinations, marches, and sidesteps that keep one foot on the floor at all times. Floor work is usually included for toning abdomen, thighs, and legs. Low impact workouts are advised for sedentary, pregnant, injured, obese, and elderly students. Low impact workouts are becoming popular classes for all.

High Impact Aerobics---usually involve some high impact activities that may include

jumping and jogging along with upper body movements timed to the beat of music. Toning and spot work usually follow aerobics. Some classes combine both low and high impact activities.

Sports Conditioning and Fitness---consists of calisthenics, jumping and running, jumping rope, emphasizing flexibility, and total body strengthening that includes power and agility work, along with aerobic conditioning.

Circuit Training which combines aerobic work with strength work---alternates 30 seconds of weight training (strength) exercises with 30 seconds of aerobics (i.e., jumping rope, calisthenics, stationary cycling, etc.) in a continuous manner.

Swim Fitness---emphasizes physical conditioning using water as resistance.

Ski Fitness---focuses on developing strong legs (thighs, ankles, and knees); balance; and coordination. Includes cardiovascular fitness exercises.

Walking---emphasizes physical conditioning. An advantage of being in a walking class is getting the beginning and ending stretching. Some classes include abdominal work.

Overweight programs---provide a safe exercise program (low intensity and longer duration) in a supportive atmosphere. Goals are to increase wellness through exercise and nutrition, as well as increase participants' self-esteem.

Senior Fitness programs---include a variety of programs such as dancercise and senior physical fitness.

Team Sports---usually offer a variety of classes in various team sports including volleyball and basketball. Classes are designed especially for women, men, and coed classes.

Non-aerobic Activities---consist of special classes that focus on promoting body flexibility and strength, such as yoga, toning, and weight training. Although these classes are valuable in terms of strength, flexibility, and stress reduction, they are not aerobic and are not intended for cardiovascular improvement.

Fitness Testing---offered by some centers, often at a low price. If you are unsure of your abilities, test results could help you determine what exercise and level of exercise are best for you at this time.

Since organized fitness/wellness programs are offered in most small-to-medium sized cities, you should be able to find a class of your choosing without too much difficulty.

When choosing a program, review Chapters 5 and 6. Consider recommendations of your doctor (if necessary), your age, needs, goals, likes, skills, and health and fitness level.

VERIFY PROPER CONTENT AND STRUCTURE OF A CLASS

Enroll in an aerobics class which follows the F.I.T. prescription--the proper frequency (three times a week or more), intensity (working at your proper heart rate for your age and taking into consideration your health condition), and time (at least 20 minutes per session). Remember that during this time, you engage large muscle groups in non-stop exercise at your working heart rate. (The FIT Prescription is discussed in Chapter 4, p. 36).

Verify that the class includes the following structure and content recommended by AFAA, IDEA, ACSM, as well as other professionals.

(l) Warm Up. Consists of specific exercises designed to precede an aerobic activity to improve performance and reduce the risk of injury. Consists of slow flexibility movements to help prepare the body for the more energetic aerobic exercise that follows. It primes the body--raises the body and muscle temperatures, sends blood and oxygen to the limbs, accelerates the heart rate gradually to prevent abnormal heart response, and warms up the specific muscles you will use in aerobics. "As soon as you start exercising, your muscles demand increased oxygen, but it takes a while for your heart to gear up to pump that oxygen" (Simon, p. 11).

A good warmup alleviates the possibility of stressing the heart, helps relieve post exercise soreness associated with build up of muscle waste products, lessens likelihood of injuries to muscles and joints, and helps the body perform better through increased muscle efficiency and improved reaction time, especially in vigorous workouts.

Static stretches to increase flexibility of muscles you'll be using sometimes follow the five minute warm up to improve flexibility of the muscles and their surrounding tendons and ligaments. Static stretching is followed by a specific warm up using movements similar to those in your aerobic workout or sport. The whole warm up phase should last approximately 10 minutes. (If there is enough time, I believe 15 minutes is better). Some classes may use dynamic (moving) stretches or proprioceptive neuromuscular facilitation (PNF) stretches.

(2) Aerobic Work. Consists of using large muscle groups in activity to work at the proper heart rate (60 to 90% of your maximum heart rate or less depending on your physical condition. See pp. 36-38). The workout begins moderately, gets progressively more intense, and ends on a less intensive level. This phase lasts at least 20 minutes or more depending on the fitness condition of the individual. The more fit person works from 30 minutes to an hour.

(3) Cool Down. Follows aerobic work to provide a gradual slowdown which brings the body temperature and heart rate back to normal--the pre-exercise rate. Exercise sends blood to the working muscles and without cool down it remains there instead of flowing back to the heart and brain. Thus the cool down helps avoid this "blood pooling" in the extremities which may cause dizziness or fainting. Further, during vigorous exercise, the adrenal glands produce increased levels of adrenaline, a natural heart stimulant. Adrenaline continues to rise after you stop exercising, and can cause the heart to beat out of control. The cool down should last five minutes or until the heart rate is less than 60% of your maximum heart rate. Cool down activities are of low-level intensity, such as slow jogging, skipping, small kicks and other leg movements, and walking (moving both arms and legs). The cool down is very important and should always be included.

(4) Calisthenics. Standing work of arms, chest, shoulders, waist, and leg work. This strength work can include working with free weights and rubber bands which create resistance. This phase lasts about 5 to 7 minutes.

(5) Floor Work. Consists of strength and toning work for abdominals, legs, inner thighs, hips, and buttocks that lasts approximately 10-15 minutes.

(6) Cool Down Stretches. Includes static stretches to stretch the muscles that you have strengthened. Individuals are most flexible following a workout when their muscles are warm. The stretch/relaxation lasts from 3-7 minutes. (More is better if you have the time).

Note: Although all proper classes start with a warm up, followed by aerobics and a cool down, they often vary as to when they offer calisthenics and floor work and how much time is spent in each.

Table 4 provides a summary of the recommended aerobic class structure and content.

Table 4: Aerobic Class Structure & Content (Components in a Typical 60-Minute Workout)

Components	Purpose	Benefits	Sample Activities	Approx. Time
1. Warm up.	Prepares cardiovascular system for vigorous activity. Allows heart rate to rise gradually to an aerobic level. Increase in blood flow warms muscles & makes them more elastic.	Helps prevent abnormal heart response. Reduces joint and muscle soreness & chance for injury. Increases flexibility, improves performance.	Slow, rhythmic aerobic movement. Fast walking. Slow marching/jogging in in place. Light calisthenics.	5 to 10 min. or more.
...sometimes followed by static stretching,	Improves range of motion of joints for aerobic activity which follows.	Increases flexibility.	Static stretches-- holding a stretch for approx. 30 seconds.	
...and warm up for aerobics.	All of the above, and *prepares body* for specific exercise which follows.	All of the above.	Lower intensity movements similar to *specific* aerobic activity or sport.	
2. Aerobic workout & conditioning.	Trains the cardiovascular system using the FIT prescription; elevates the HR to 60-90% of max. (depend.on fitness level).	See benefits, p. 24-25.	Activity involves using large muscle groups. Aerobic dance, running, swimming, x-country skiing, cycling. See p. 40-41.	20 min. or more.
3. Post-aerobic cooldown.	Brings down the HR, breathing, & circulation gradually and safely to pre-exercise level.	Prevents "blood pooling" in legs. Helps decrease blood lactic acid levels which contribute to muscle soreness. Helps prevent heart irregularities that can occur in some people.	Same activities as in #1 warmup. Keep moving at a low intensity.	
The three components above should ***always*** be included in a workout. If time allows, it is advantageous and advised to add standing floor work or calisthenics, floor work, or body toning to a workout. ACSM now advises a strength component be added two times a week. (See p. 50.)				
4. Calisthenics.	Develops musculoskeletal conditioning to improve strength & endurance of bones, connect.tissues, muscles.	Shapes body; strengthens arms and muscles not used in aerobic workout to help prevent muscle imbalance & injuries.	Waist work; lunges, squats, pushups; can use free weights/rubber bands to create resistance.	5-7 min.
5. Floorwork.	Same as above (#4).	Same as above (#4). Strengthens inner and outer thighs, buttocks, abdominals.	Leg lifts; abdominal curls.	10-15 min.
6. Cool down stretches.	Stretches muscles that have been strengthened.	Lengthens muscles contracted during exercise. Allows body & mind to transition from exercise to rest.	Static stretches such as yoga.	3-7 min.

The best classes offer a wholistic body workout fostering flexibility (stretching), muscle strength and endurance (calisthenics, toning exercises, or weight training), and cardiovascular health (aerobics).

EVALUATE THE CLASS

After checking a program guide or getting a description of classes offered at various centers, and verifying one or more that have a sound structure and content, I recommend that you visit a class to observe and evaluate it before you actually make a commitment or sign up. Many centers have a drop-in policy for the first class, so ask to attend and participate in one class to see how well it suits your personality and if it is sound. Here are some other tips for evaluating a class.

1. Introduce yourself to the instructor and tell her your fitness condition. Ask what clothing, shoes, and equipment are needed for class. After class or at an appointed time, inquire about the philosophy of the class.

2. Don't assume that the class will be a certain way. Visiting class will give you an opportunity to ask questions. Will all activities take place in the same room each time (most classes do), or will some activities take place outside? (When weather is nice, I take my class outside because they like to run. In one class, a woman signed up who assumed that the class would always be held indoors. She had a grass allergy and eventually dropped out of class when the weather permitted going outside.) Think of a number of questions that are important to you before you go to class. What kind of an exercise floor does the facility have? (A hardwood floor with an air space or a sponge layer beneath is good.) The worst is a cement floor covered with carpet. Are the activities varied or is the routine primarily the same each time?

3. Talk to others in class. Have they been in the class long? What do they like about the class? How do they rate the instructor? Do they seem to actively participate?

4. Check to make sure the class actually follows the proper sequencing and content described earlier on pp 85-87. Does each class begin with a warm up followed by aerobics and end with a cool down? Do students take their pulse during class to make sure that they are working within their proper heart rates? (This is not always done in the more advanced classes, because these people can rate themselves on exertion). Are static stretches held for about 30 seconds? Does the instructor keep students moving during the entire aerobic workout?

5. Make sure that a variety of activities are presented to prevent boredom. For example, does the class include aerobics, calisthenics and toning and floor work or is it primarily one or the other? A combination of both is better. I like to spend the largest percentage of time on aerobics, especially in winter months when it is more difficult to participate in outdoor activities. I attended one class in which the focus was on toning for 45 minutes and only 15-20 minutes on aerobics. I tire very quickly of leg lifts, boredom sets in, so I knew this was not my kind of class.

It is important to consider how you feel about the amount of time that is allocated to different activities, as long as the previously described basics are covered. Are activities varied enough to keep you from being bored? Does the variety include such things as running, stairs, bench step ups, jumping rope? If music is used (most do), does it seem to match the physical activity?

6. Rate the Instructor, as follows:

o Ask the instructor about his/her training. How long has s/he been teaching? Is s/he certified, or does s/he have a degree in kinesiology? (Four good certification programs are offered through the American Fitness Aerobic Association (AFAA), American Council on Exercise (ACE), formerly International Dance Exercise Foundation (IDEA), American College of Sports Medicine (ACSM), and Kenneth Cooper's Institute for Aerobics Research. (See p. 189.) Instructors should be certified in Cardio-Pulmonary Resuscitation (CPR).

o Does the instructor simply perform, or educate? A good instructor directs the class, offers advice, and explains some of the what-why of specific activities. Instructions for how to do exercises most efficiently and safely should be given. Ten well executed repetitions using correct form will improve muscle strength, while 100 sloppy repetitions will have little benefit and could result in injury. Does the instructor offer such guidance? Some may present related information on topics such as nutrition or health programs available in the community.

o Does the instructor look fit with good muscle tone?

o Does the instructor introduce him/ herself to new members of the class and tell them about the class structure and content? Is s/he willing to take time to answer questions?

o Does the instructor motivate the class?

o Does the instructor present a well planned, safe, and organized class?

o Does the instructor participate in the workout, or just put in the time?

o Does the instructor keep the aerobics class moving or does the class start and go, for example, if the teacher repeatedly stops the tape, does she keep the class jogging in place or moving?

o Is the music volume at a safe level? Can you hear instructions and cuing or is the music too loud?

o Is there a proper, smooth transition from one movement to another, or is it awkward and difficult to make transitions?

o Is the class fun? Do participants seem to be enjoying the activity even though they are working hard and concentrating?

7. Identify how you feel emotionally and physically after the class. Do you feel a little tired, but still enthusiastic and looking forward to the next class? Do you think that you want to continue in this class for six weeks? Do you feel comfortable in the setting, with the instructor, and with the rest of the participants?

GET THE MOST FROM YOUR CLASS

Once you have evaluated and chosen your class, you are ready to begin. Getting the most from your class depends partly on your attitudes. You can have an excellent teacher, but it helps to put some effort into your class, listen to instructions, and seek some knowledge on your own. When you do this, you will gain more from the class.

Get to know your teacher and other participants. Ask the teacher questions when you have them, and discuss your goals and needs to see how they fit into the total program. The instructor may suggest some other activities or reading materials outside of class which may be of interest to you.

Put some energy and enthusiasm into your workout! Try to enjoy exercising. Use your energy to move into exercises, rather than force your body.

My suggestions to any class for getting the most from a fitness workout are:

(l) Don't eat a heavy meal within three hours before class. Exercise changes the way your blood is distributed, sending more blood to the working muscles where it is needed, and less to other organs (such as your digestive tract). (Simon, p.8.) Since blood concentrates in the digestive area after eating, if you eat a large meal, not enough blood will be available to your muscles because it will be tied up in your stomach digesting your meal. It takes at least two hours for the blood to resume normal distribution. A light meal rather than a heavy meal is preferred several hours before a workout because it takes much less time to digest, and you will feel and perform much better during the workout. Consequences of exercising soon after you have eaten include heart stress, cramps, and diarrhea. (Some experts suggest eating a snack like an apple one hour before a workout to supply energy, but opinions on this differ).

Do drink water before class (try to drink two to three glasses of water two hours before class), during class when you need it, and after class.

(2) Buy suitable shoes for the class you are taking. Look for stability, flexibility, cushioning, and durability. Good shoes reduce your risk of injury, feel good, and improve your performance. All shoes should feel comfortable and fit. You need toe room of about 1/4 to 1/2 inch between the end of your longest toe and the end of the shoe. Ask the teacher what the proper shoes should be--if you are doing aerobic dance, aerobic shoes give you the best stability. Aerobic Shoes should provide support for the ankle and arch, lateral stability and motion control, shock absorption, and should fit comfortably but snugly, providing adequate cushion to lessen the stress and strain to your forefoot and leg. (AFAA, p.145.) If you jog, running shoes are a must.

Shape magazine reviews shoes annually. The September, 1988, issue (pp. 123-127) has an excellent article on selecting exercise shoes. The guide, written by a podiatrist, includes a discussion of qualities that running, court, and dance exercise shoes should have and for each of the categories of shoes gives specific brand names to try. The October, 1989, issue (pp.84-95) evaluates the 60 best sports shoes -- running, walking, tennis, cross-training, and aerobics. The October, 1990, issue (pp. 100-107) lists the top 10 shoes for each of five activities: aerobic dance, walking, running, cross-country, and tennis. In easy to read table format with discussion, shoes are rated on a scale of 10 for their shock absorbency, stability, design and construction, and overall score. Prices are given. Also included are tips for shopping, and a glossary.

The February, 1991, issue of IDEA Today (pp.36-41) has an excellent article on how to choose shoes. The article discusses what's new in design and construction of shoes, focusing on the composition of midsoles. Also covered: What the differences are among sports-specific shoe types; when to replace shoes; how to personalize your shoe selection based on body and foot type, injury history, and exercise activities in which you regularly participate; and how to buy shoes. The article is general and does not suggest name brands.

(3) Don't compare yourself with other people. You are unique and are not in class to compete with anyone. People perform at different levels--some may have been in class for awhile, may work out regularly in a sport,

and may seem to move faster or not tire. A beginning class should not be competitive. Feel good about yourself and have fun. It is especially important not to compare yourself with other people in flexibility. Flexibility depends on a person's bone structure, elasticity of tendons and ligaments, and muscle tightness, and whether they have been stretching for some time. As a rule, women are more flexible than men. When stretching, it is important to start out doing an easy stretch and work into a little more deliberate stretch. Never bounce, force, or pull.

(4) Prevent injuring yourself by progressing in exercise gradually. Most injuries are a result of overuse or overstress in nature. Don't push too hard when you are first beginning. Pace yourself. If you get winded, feel any kind of a strain or feel tired during aerobic exercise, modify the activity, or walk around. If you have any kind of a weakness or injury (for example, if you know that you had a knee problem when you jumped in the past, "don't jump;" instead, walk in place). Never do any exercise which aggravates a problem. MODIFY when you need to. This pertains to cardiovascular work as well as strength and endurance. In doing strength activities, when you tire, take a break and join in again when you feel comfortable.

(5) Know that there are potential risks of injury associated with certain exercises (see p. 75-76),such as the following:

o Straight leg sit ups and double leg raises, which can put excessive pressure on intervertebral disks;

o Plies (squats) and the hurdler's stretch (sitting legs out & turning one leg under at knee & stretching back), both of which can put stress on the knees. When doing squats remember to always have knees over toes.

o Full neck circles, which put pressure on the cervical disks.

(6) Use proper body alignment in class. The body is held erect, but relaxed with abdominals held firmly. Arms and legs should be straight, but not locked. Pay attention to the instructor's direction.

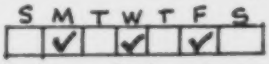
(7) Be aware of signs of overexercising in class, which include the following: shortness of breath, undue muscle soreness, or cramping. Lower the intensity of your exercise and tell the teacher if you have any of these signs.

When heart action is abnormal, experts suggest that you stop. Don't exercise again until you consult with your physician. Most, if not all, fitness experts are adamant about this. Abnormal warning signals which could suggest heart problems include fluttering heart beat; chest or throat palpitations; irregular or rapid heartbeats; sudden drop in pulse rate, pain, pressure, or tightness in the middle of the chest or in the arm or throat; severe dizziness, breathlessness, wheezing, lightheadedness; unusual fatigue, sudden loss of coordination; nausea, confusion, excessive perspiration, cold sweat; glassy stare; pallor, blueness; or fainting. (Simon, p. 23, 267; AFAA, p. xvii; Sharkey, p. 328, and others.)

Signs of working too intensely include continued high heart rate 5 to 10 minutes after you stopped exercising, nausea, insomnia, exhaustion at the end of exercise that carries over to the next day, becoming sick more than normal, and getting various injuries (i.e., shin splints, knee or other joint aches, continual muscle or joint soreness).

(8) In every class, warm up at the beginning and cool down at the end. Arrive at class on time for warmup; however, if you are late take time to stretch and warm up. Never just jump right into the activity. Similarly, cool

down when you must leave early. From an intense aerobic workout, cool down by a slow walk or jog and then walk it out. Also, let the instructor know when you must leave early, so he/she won't wonder if you are physically stressed or injured.



(9) Attend class regularly. It has been estimated that you start losing fitness benefits after only 72 hours without a workout. (See the reversibility principle in Chapter 7, p. 78.) In addition, once you have missed, it will be more difficult to workout the next time and you may eventually become discouraged. So, unless you are ill, *try to make class a #1 priority*. Cailliet states that "inactivity rapidly deconditions the body. For every week that you go without exercise, you have lost 10% of your fitness." (Cailliet, p.14.) Remember that after ten weeks of not exercising, you will have lost most of the fitness training benefits you had gained.

Also, when traveling or vacationing, plan some time for fitness. Many hotels have exercising facilities. Hiking, jogging, and walking are a good alternative and you can always do one of these activities (see Chapter 12, pp. 173-174, for how to fit exercising into your schedule when traveling on business or pleasure.)

(10) Develop body awareness. Be aware of how your body feels in each class; i.e., is it tight, flexible, sore, and so on. Your physical condition will differ from class to class depending on previous activity (or inactivity) --recent strenuous activity, or no exercise for a long time (vacations often intervene...but needn't)--and on your health. Recognize and respect your body's confines.

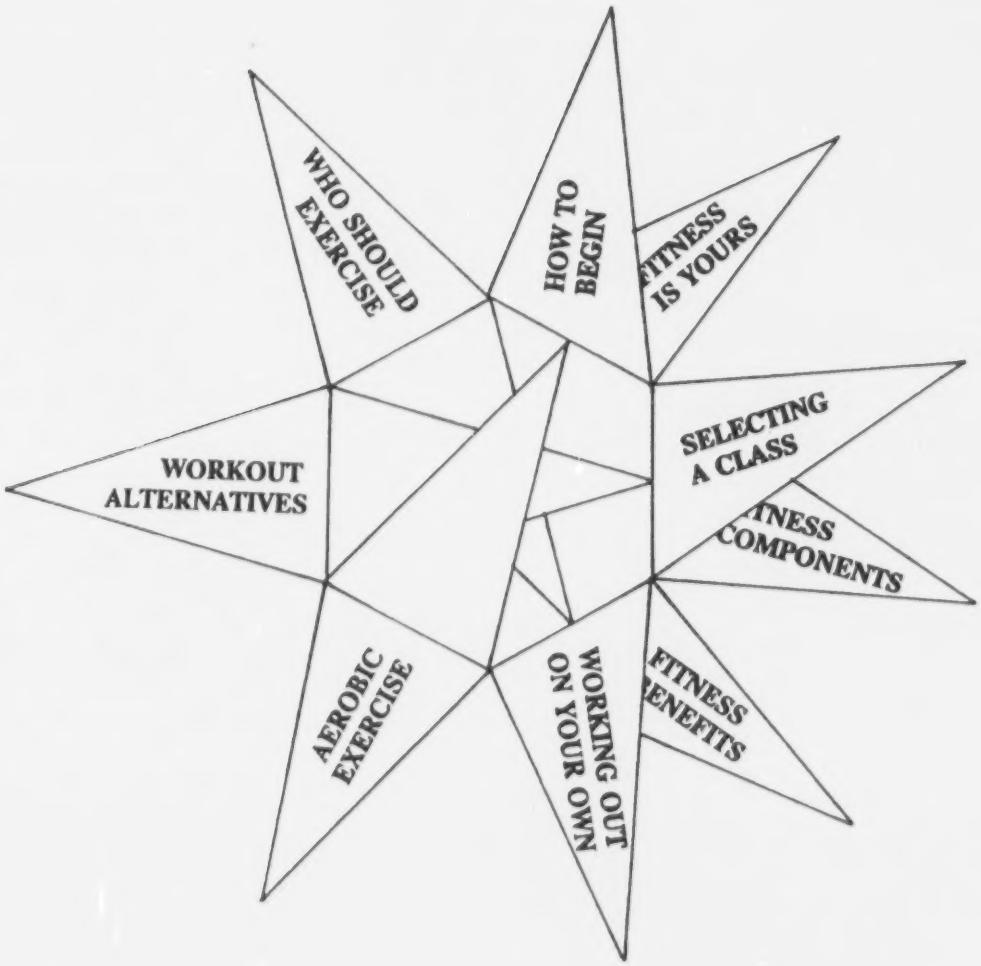
EFFORT AND COMMITMENT

Fitness is like anything else that you do--you get out of it what you put into it. You need to work hard enough (and there is no substitute for that), be consistent and persistent, and work out regularly three times a week---for the rest of your life. We live in a society that dwells on the "fast"....fast food, fast life style, fast career track, fast buck, etc. There is an attitude of wanting instant gratification. Well, real fitness and "fast" do not go together. You really have to earn your image of being "fit." It is difficult and dangerous to hurry it along.

Incorporate fitness into your life and make it a habit. If you make this commitment, the quality of your life will improve dramatically. For the small amount of time that you put into fitness, you will reap disproportionately greater benefits of good health (both physically and mentally) and of looking and feeling better than you ever imagined. *The time you spend in exercise returns to you tenfold!*

YOU CAN DO IT!

9. HOW DO YOU WORK OUT ON YOUR OWN?



9. How Do You WORK OUT ON YOUR OWN?

If you have decided to work out alone and design your own program, be sure to read chapters five, six, and seven carefully. Chapter 5 offers tips for choosing the right kind of aerobic program. When start-ing a fitness program on your own, have a physical examination and be exercise tested with a doctor present if you are older, or have symptoms of a disease, or have risk factors. (See Chapter six, pp. 58-60.) Information in Chapter 7 describes how to set your goals, your uniqueness in terms of body structure and physical capabilities, and describes how to choose an activity depending upon a variety of factors involving your general health condition, age, interests, skill levels, and availability of activity.

Also, if possible, get some advice from a fitness professional and talk over the program with others who exercise regularly. Then consider the following factors:

- o Assessing your fitness level.
- o Motivation.
- o Monitoring your exercise program.
- o Cautions to keep in mind.
- o Planning your program with the help of resources.

ASSESS YOUR FITNESS LEVEL

After you have determined whether you need to obtain medical clearance before engaging in an exercise program, assess your current level of fitness. This can be done by health professionals at various centers (see p. 57) or you can use assessment profiles offered in several books.

Several books offer step-by-step procedures for measuring your cardiovascular fitness, as well as other components--body composition, muscular strength and endurance, and flexibility.

Kusinitz and Fine include a thorough section on assessing your fitness: aerobic fitness, body composition, muscular strength and endurance, and flexibility.
Sharkey provides tests for assessing cardiovascular testing through step tests, running, and cycling tests, as well as tests for muscular strength and endurance, flexibility, and body composition.
Kenneth Cooper presents 12-minute tests to help you estimate your aerobic capacity for walking, swimming, running, and cycling.
Simon and Levisohn include self-assessment tests for cardiorespiratory, flexibility, strength, endurance, psychological, and nutrition levels. Simon presents a self-assessment field test you can use to estimate your aerobic fitness level, but cautions that evaluation in an exercise lab is much more accurate. He suggests walking, jogging, or running to see how much distance you can cover in 12 minutes, using the following guide.

Miles Covered in 12 Minutes	Cardiovascular Fitness Level
Less than 3/4th	Poor
3/4th to 1 mile	Fair
1-1/4th mile	Good
1-1/4 to 1-1/2	Very Good
1-1/2 to 1-3/4	Excellent
More than 1-3/4	Superior

(Simon,p.27.)

Abstracts of these books are included in the appendix. Check your local library or bookstore for availability.

Lorna and Peter Francis offer a good chapter on self-testing (in If It Hurts, Don't Do It, Prima Publishing, 1988, Chapter 3, pp. 19-44). The reader is lead through a self-testing program consisting of a health history questionnaire, analysis of posture, and tests in muscle tightness, muscle strength, and aerobic fitness.

Aerobic, strength, and flexibility tests measuring how you respond in everyday activities are suggested by Garrick. This novel approach fosters awareness of how you react in various activities. He lists over 50 questions to ask yourself and suggests that you think of new ones for your particular situation. Examples: to measure aerobic fitness, ask yourself, when you walk the length of an airport terminal do you become winded? In reference to your strength, can you carry a 25 lb. sack of something? Questions such as "Can you tie your shoes without having to sit down?" measure your flexibility in that situation. This commonsense list (or one that you make up) can help you assess your fitness abilities. (Garrick, pp.24-30.)

Information on your fitness condition will help you design and plan a personal fitness program based on current health status.

SELF MOTIVATION

Motivation may be one of your most difficult problems. You need to set up a schedule, a time, and a place. I think it helps to write this schedule down, stating when, what, and how long...date, time, what you will be doing, and how long you will spend in the activity. Create an environment conducive to exercising. Get cooperation from others when needed; for example, if living with your family, show them your schedule and let them know you want to stick with it. If you need to, take the phone off the hook; use music to set the mood; get appropriately dressed. Don't let anyone or anything take your exercise time away from you. Stick to your goals. Once you deviate and make excuses, you reinforce the habit of skipping. Of course, if you are sick or there is an emergency of some kind, you must skip; but set another day and make it up.

Some people love the activity they have chosen immediately, feel a high from it, and this keeps them motivated. For others, however, it may take several weeks, before they enjoy the activity. Studies show that most people drop out of exercise within the first six weeks. Knowing this, commit yourself to the exercise program for the first six weeks.

A few ways to stay motivated include:

o Reward yourself appropriately (not with food if you want to lose weight) with tangible rewards such as going to a movie or concert, buying a new tape or book, or doing something else you enjoy. Also, use "self-talk," letting yourself know that you are getting better and better.

o On days when you have problems motivating yourself, it helps to change scenery if possible. If you are walking or jogging, take a different route, tackle hills, work out on a track. If you are a swimmer, find a new pool to try out.

o Recognize that there will be days when you don't feel motivated. On these days just start! Sometimes on cold, wintery mornings I don't feel like running, but I just begin. About 10 minutes into the run the sun comes up and I realize what I would have missed--seeing the sunrise--and begin to get high. Participants in my

classes sometimes tell me that they almost did not come to class for one reason or another, but once they get there and start working out, they are glad they did.

o Expect setbacks occasionally, for instance, if you are sick or something unexpected comes up. When setbacks occur, have the tenacity to begin again as soon as possible.

o Compare data from the fitness testing done prior to beginning your program with repeat testing data at three-month intervals. Do this for the first year, to show how much you have improved since you began. You may see how much your resting and working pulse has decreased (decreased heart rates are indicators of fitness--as the heart becomes more efficient, heart rates lower), how much body fat you have lost, and how much you have improved in all areas of fitness. It's written proof of your improvement... and improvement sustains motivation.

o Also, it helps to keep records or a diary of your daily or weekly fitness activities because it shows you how much you have progressed. For instance, when you first started your walking program you were walking, say, 15 minutes, and now you are up to 45 minutes.

o Challenge yourself to either run, hike, walk, swim, bike, or wheelchair the cumulative distance of a specified area, state, or nation. Keep track of your progress through an exercise log or journal, or mark the number of miles on a map. Then you can say, for example: I've walked (cycled, run...) the equivalent of two trips across the U.S. since I've started exercising. The National Association of Governors Council for Physical Fitness and Sports has a specific program that awards points for actual miles traveled. If interested, contact your governor's office for information about a possible program.

o Take a picture of yourself before you start a program and six months later to see the new improved you and to help motivate you to continue.

o Get a buddy, if this will help. Some people like to work out alone, while others enjoy companionship. Having a friend to get you to exercise at a time and place you have both agreed to will help you both stick to your plan and make the workout more enjoyable.

o Get an inspiring role model who exemplifies and practices good health and fitness. If you can't find one, Dan Millman suggests creating in your mind your own inner athlete who represents the ideal. He suggests painting, sculpting, and picturing in your mind a person with athletic physical, mental, and emotional talents that you admire. Then, this ideal model can serve as a guide and inspiration. (Millman, The Warrior Athlete, pp. 163-164.)

o Read and implement Art Turlock's book Getting Physical. It's a great book for how to plan, commence, and adhere to a program. (See the abstract in the Appendix.)

o Robert Pritikin gives advice on how to adhere to his program by keeping it SIMPLE. Specifically, he tells how to Self-motivate; Identify eating triggers; Make new choices; Plan ahead; Learn to reward efforts; and Engineer improvement for success. (Pritikin, Robert, pp. 336-344.)

MONITOR YOUR EXERCISE PROGRAM CAREFULLY

When you work out on your own, you need to monitor your workout to make sure that you are following the FIT formula (page 36) to train your cardiovascular system and to keep from getting injured.

Here is a reminder of the FIT prescription for those in good condition:

Frequency--work out three times a week or more.
Intensity--work at your proper heart rate (THR) for your age, taking into account your health conditions.
Time--exercise aerobically at your target heart rate 20 minutes or more per session.

If you have been sedentary for a long period, be sure to pre-condition your body; i.e., prepare your body adequately and safely before choosing a strenuous activity. Example: walk six weeks or so before you jog. More studies are showing it may be better to work out for longer periods of time with less intensity. When this is done there is less injury, you burn more--or about the same--calories, and fat is used as fuel when you are working out aerobic-ally. For more information about pre-conditioning, see Chapters 4 and 6, pp. 37-38, 60, and 68.

Body flexibility, one component of fitness, helps prevent injury. Your program should incorporate some static stretching before and after an activity. It's especially effective to stretch after you have worked out because when your muscles are warm they are more pliable. You need to stretch the muscles you have strengthened. If you don't stretch after you work out, your muscles remain in a contracted, shortened state. They are tight and more likely to tear.

Some excellent books on stretching include those by Bobby Anderson and John Jerome. Abstracts on these are included in the Appendix. Three other good books are Body Sense by Sue Luby (Faber and Faber, Inc., 1986); Stretch and Strengthen by Judy Alter (Houghton Mifflin Co., 1986); and Stretch and Relax by Maxine Tobias (The Body Press, 1985).

Your program should also incorporate warm up and cool down, discussed on pp. 86-87, to prepare your body for the workout and gradually return to your normal non-exercise state afterward. This can be slower walking if you are choosing an activity of walking, in a jogging program it can be walking at a fast pace for several minutes, and then slow jogging for several. You can use the same routine for cooling down each time.

To prevent injury to the musculoskeletal system, you need to take a gradual approach to fitness. Set small goals at first, and get into fitness gradually so that you won't injure yourself. I know people who are in good health who decided to begin a jogging program on their own. They jogged 4 miles the first few times out, and within weeks they were injured and had to discontinue the activity. Your muscles and joints need to be conditioned gradually. Progress by degrees and you will be able to continue with the activity.

Looking ahead, you also need to think in terms of maintaining muscle balance. Specific sports develop specific muscles. Example: jogging develops (can over-develop) the calf muscle in comparison to

the shin-- one cause of shin splints. For most people, the weak muscles that need strengthening include abdominals, shins, and hamstrings. Strong areas we need to stretch include hip flexors, quadriceps, and calves.

It is helpful to work opposing muscles to develop muscle balance. This is not likely to be a problem for you if you are a beginner in a walking program; however, if you are in a jogging program, you might include a few exercises that will develop the front (tibialis) muscles of the legs to maintain muscle balance and prevent shin splints. Eventually you want to work on developing your upper body strength to create balance with your more highly developed leg and lower body strength.

KEEP THESE CAUTIONS IN MIND

1. **Purchase the best shoes for your particular activity.** The price of shoes is a small investment which pays big dividends in terms of comfort, performance, and injury prevention.

2. **Don't eat within three hours before you work out.** After eating, blood concentrates in the digestive area and takes at least two hours to resume normal distribution to the body. Be sure to drink water before, during, and after your activity.

3. **Discover and practice proper body alignment for the sport or activity you have chosen.** Try to locate a book that describes proper body alignment or talk to a fitness expert.

4. Medical authorities caution that you should **stop any activity if you feel nausea, short of breath, labored breathing, lightheadedness, cold sweat (chilled), undue muscle soreness, cramping, uncoordination, mental confusion, unusually fatigued, dizzy, unsteady, have pale or clammy skin, or chest pain.** Get help and call your doctor.

5. **Don't compete when you first begin a program.** Don't compare yourself to others. Work at the intensity that is right for you. (Competing can be great if you are in top shape, but otherwise a fast way to injury. If you decide to race, wait until you can first go the distance comfortably).

6. **Be aware of environmental conditions when working out--especially, high air temperature, humidity, and solar radiation.**

In hot weather.

When working out in hot weather you generate heat that needs to be dissipated through perspiration or the lungs. Not getting rid of excess heat can result in heat cramps, exhaustion, heatstroke, and damage body organs. Be aware of warning signals:

First sign: **heat cramps.**
Symptoms: muscle spasms of the working muscles.
Action to take: stop in shade, massage and stretch muscles, and drink water.

Second sign: **heat exhaustion.**
Symptoms: lightheadedness, dizziness, fatigue, nausea, rising temperature, and profuse sweating possibly accompanied by chills.
Action to take: stop, get in shade, cool off (if possible, take a cool shower), and drink water.

Third sign: **heat stroke.**
Symptoms: absence of sweating resulting in dry, hot skin and high body temperature.
Action to take: This is a medical emergency! Requires getting the person out of the sun (if conscious, the person can drink cold fluids), and to immediate treatment in a hospital emergency room. (Simon, pp.274-275.)

Medical experts suggest the following:

a. To help your body adapt to the heat gradually, **work at a lower intensity.** ACSM recommends decreasing work intensity and duration and replacing fluids during and after exercise in extremely warm conditions. (ACSM, p.116.)

To acclimatize your body, begin the first hot day by exercising at approximately 50% of your THR and increase it gradually thereafter. Acclimatization should take place in about two to four weeks.

b. Water is lost from the body by sweating and needs to be replaced, so **drink plenty of cold water before, during, and after the workout** (see p. 139).

c. Not as much evaporation occurs in a humid environment, and it is more difficult to get rid of the excess heat load that comes from exercise. So, **on humid days when evaporative heat dissipation is decreased, towel off frequently.**

d. **Wear minimal clothing that is loose, cotton** (which absorbs sweat well), **light in color to reflect heat, and a hat for shade when the sun is shining.**

The American Running and Fitness Association (9310 Old Georgetown Road, Bethesda, MD, 20814 --or phone 301-897-0197) publishes a free brochure on how to work out in hot weather.

In cold weather.

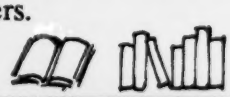
Be aware of air temperature, wind speed, and humidity-- and dress accordingly. It is best to dress in several layers of warm, light clothing. Be sure to wear a hat, because much body heat escapes through the head. During cold conditions, more blood is automatically directed to the core of the body, and not as much goes to the muscles. Therefore, a good warm up is very important to get blood to the muscles before engaging in a strenuous workout.

During winter when sidewalks, trails, and roads are icy, consider indoor gyms and tracks. Many people slip and fall on ice when jogging.

USE RESOURCES TO HELP PLAN YOUR PROGRAM

Once you have decided on the activity you are going to pursue, you now need to set up a plan. There are several ways to work out on your own with the help of books, TV programs, video programs, community facilities such as par courses, health clubs, and personal trainers.

Books



A number of books present exercise plans. Several that offer an individualized approach to planning your program are briefly discussed below. Full abstracts of these books appear in the Appendix.

** **Kenneth Cooper** offers information and guidelines for choosing an aerobic activity and presents a step-by-step program of activities including walking, running, jogging; cycling; swimming; progressive treadmill; aerobic dancing; handball, racquetball, squash; hockey, lacrosse; stationary running; stationary cycling; stair climbing; and rope skipping.

These eleven programs are grouped in age categories to help you individualize your program--under 30, 30-49, 50-59, 60 and over. Aerobic points are given for exer-

cises when performed at a certain intensity during a certain duration of time. Scores are based on the energy cost of each activity so that you know how well you are doing each week.

The plan builds in motivation and offers a good way to evaluate what you are doing. It is set for 10 weeks, after which you can continue following one of the maintenance programs suggested, or can develop a program of your own based on aerobic equations at the end of the book.

** **Sharkey** presents a programmed-type, individualized approach for developing aerobic and muscular fitness, and for weight control. Participants can tailor a fitness program to meet their specific needs following step-by-step procedures that include starter walk-jog-run programs for aerobic fitness, warm-up exercises, calisthenics, and exercises with weights for muscular fitness.

** **Kusinitz and Fine** have written an excellent book to help individuals design their own fitness program. They offer model exercise programs that can be followed for walking, running, circuit training, swimming, weight resistance, stretching, and systems for exercising at home, and also a model program for losing weight. You can choose from listed sports and activities and create a personalized program.

** **Simon and Levisohn** provide an exercise prescription for fitness to improve your health and athletic performance. It includes all fitness components to create a balanced program.

** **Garrick** (Chapter 4, pp.109-174) tells how to train for specific sports activities by supplementing them with weight training and/or aerobic conditioning. Activities covered include tennis, golf, running, walking, swimming, alpine skiing, cycling, aerobic dance, weight training, and stretching. (Garrick, James G. and Peter Radetsky, Ph.D., Be Your Own Personal Trainer, Crown, 1989.) Note: Abstract is not included in the Appendix.

The YMCA published a book that is now out of print, but may be available through your library. **The Official YMCA Fitness Program** by William Zuti presents illustrations, text, and calisthenic exercises for warming up and cooling down, flexibility, strength and endurance, and aerobics. Sections are included on using machines to build strength and endurance and on sports conditioning, including swimming, canoeing, kayaking, rowing, racket games, handball, ball games, jogging, skiing, skating, hiking and dancing.

These are just several of the books offering specific workout plans. There are more on the market offering helpful information, tips, techniques, motivation, and maintenance plans and programs, ranging from low impact to high impact activities.

Scan the library and bookstores for books that provide specific information on the type of activity or sport that you choose. Look also on magazine racks for journals on the activity of your choice.

Personal Trainer

When you want to get optimum fitness results from a minimum amount of time (and have the financial resources), you may want to hire a personal trainer to work with you one-to-one. If you have physical problems or injuries, a personal trainer would be beneficial to you.

Advantages are that you can get a quality workout at home or at a club when it is convenient for you. The trainer designs a customized fitness workout, motivates you, gives you personal attention, and keeps you on track.

The seeming disadvantage is cost--most trainers charge $25 to $50 per hour. While this may seem high, it actually is not when you consider the trainer's commuting time, lesson preparation, cost of equipment, and cost of continuing education which a good trainer pursues.

The job of a trainer is to design a safe and effective program based on your needs, interests, and goals; evaluate your fitness level; direct and motivate you so that you workout and get results; periodically measure results; offer exercise modifications; and give advice on such things as nutrition and weight control.

The trainer draws up a contract outlining the client's responsibilities, which include working out consistently.

Seek out a qualified trainer, one certified by ACSM, ACE (formerly IDEA Foundation), IAR, or AFAA (see Appendix at the end of the book, p. 189). Ask how many people they train or have trained, and see if they have or can get recommendations from others.

Television

A second way to work out on your own is to check your TV listings for aerobic fitness programs. The programs I have seen (Lifetime, Entertainment and Sports Program channels, and others) offer excellent exercise programs with instructors making suggestions for modifications of exercises that may be too intense for beginners.

Three good programs with which I am familiar, and which include proper sequencing and other recommendations in this book, are Gilad Janklowicz's "Bodies in Motion," Esterhay's "Homestretch," and Charlene Prickett's "It Figures."

The shortcoming of a 30 minute program is that it does not always include 20 minutes of continuous aerobics required in the FIT prescription. (Prickett's program does.) So **you** need to modify and work longer on the aerobics portion. You will need to continue exercising through commercials or other breaks to follow the FIT formula. You might want to have a jump rope handy or run or march in place when there are breaks.

Computer Software Programs

If you own a home computer you might want to explore a number of exercise software programs available at computer stores or through mail order. Shape magazine describes and lists five sample computer software programs (one cycling, two running, one swimming, and one tennis) and provides information on compatibility, price, and availability. The author states that many of the programs include training logs to help people keep track of their workouts. Some programs take on the role of coaching--interpreting workout data and making recommendations. All are designed to help users increase exercise awareness and performance. (Shape, June, 1988, p. 142-143).

Videos

A number of video cassette programs are available, and more are coming on the market all the time.

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o The Jan./Feb., 1990 issue of American Fitness (The American Fitness Aerobics Association's (AFAA) professional magazine) included its 3rd annual review of over 20 of the 1989 exercise video releases. Video review criteria focused on instructor technique, safety information, technical proficiency, and overall effectiveness. Review coverage was broad including toning, aerobics, muscle strength and endurance, and flexibility, plus review of the content areas of new age, children, comedy, sports, and dance. In addition to descriptive reviews, availability information was provided. (AFAA, 15250 Ventura Blvd., Suite 310, Sherman Oaks, California 91403.)

o Shape magazine reviews exercise videos annually. Below is information from the 1989 and 1990 reviews. (Watch for the 1991 review.)

o Approximately 40 videotapes are reviewed in Shape's fourth annual fitness video review. (Shape, Sept., 1989, pp.78-82). These were selected from more than 100 videos judged by health and exercise specialists as excellent or very good.

Arrangement is first by category: aerobic workouts, body conditioning and weight training, "how-tos" (i.e., how to walk for fitness), weight loss and health, and yoga. Within each category, selections are in alphabetic order.

Selection criteria focused on instructor techniques, motivational quality, suitability to targeted audience, safety and effectiveness of exercises, quality of production, as well as other criteria specific to each category. Reviewers give information on level for which the video is appropriate; whether high or low impact; duration (length) of workout; whether weights are used; quality of production; and cost and availability.

The December, 1990, issue of Shape (pp. 65-72) includes a complete review of 92 exercise videos. The format changed from the 1989 version in that it is a clip-and-save section and ratings are given for all reviewed tapes. Arrangement is in a very easy to read chart form. Information provided includes name of video, availability, length of workout, and price. A panel of experts rated the videos on a scale of 5 (excellent) to 1 (poor) for quality of instruction, production, and overall presentation.

Comments made about each video focus on appropriateness of workout levels for the target audience, instructor's techniques, the tape's motivational quality, work safety and precautions, whether the video accomplished what it claimed, and other criteria.

Videos are organized into three workout categories: aerobics (53 videos reviewed; check marks let readers know whether the video is high- or low-impact, includes a strength segment with weight training equipment, or floor workout without weights; body conditioning weight training (29 videos reviewed); and stretching/yoga (10 videos reviewed). Within each category, videos are arranged alphabetically.

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With the abundance of exercise tapes available, you'll want to do a little research on what video(s) to purchase. Most cannot be rented and previewing is not usually offered by manufacturers. You want to make sure the video offers proper techniques and safety instructions.

Magazine reviews discussed above should be helpful in this regard.

"The Complete Guide to Exercise Videos" is an excellent catalog listing approximately 185 current cassettes. Descriptions include information on length of video, time spent on each activity, exercise level, type of music, type of activity, ratings from magazines such as Shape, as well as price. Free from College Video Specialties, Inc., Dept. G, 5390 Main Street N.E., Minneapolis, MN, 55421.

Erol's Video, with over 150 stores in the East, offers a free, 3-day "video sampler" previewing 15 most popular exercise videos it carries for rent or sale.

o Two videos for large women, that offer low-impact cardiovascular routines for "overweight women who want to begin exercising" are: "Women in Motion...An Odyssey," available from Big Tape Enterprises, PO Box 19000, Alexandria, VA 22320 (800-582-2000), and "Just Move" from D.P. Moves, Inc., PO Box 5201, San Jose, CA (408-241-1510).

o Videos for Seniors include:

"Focus on Fitness." Forty-five minutes. Avail.: Downtown Atlanta Senior Services, 607 Peachtree Street, NE, Atlanta, GA 30365 (404) 872-9191. Price: $29.95.

"Seniorcise." 70 minutes. (20-minute chair exercise and 50-minute regular. Avail: Trinity Wellness Center, PO Box 5020 Minot, NE 58701. Price: video $24.95, audiotape $11.95 plus $3.50 shipping.

"The Dancin' Grannies Exercise Program." A 50 minute low-impact workout. Avail: The Dancin' Grannies, 10 Bay St., Suite 3, Westport, CT 06880. Price: $29.95.

Par Courses

Some communities have parks with par courses in them. In suitable weather, par courses offer a good workout to follow, including guidance and a way to evaluate how well you are doing. If you keep moving at your targeted heart rate, par courses help you integrate strength work along with aerobics.

Working Out At Home On Machines

A number of exercise machines available on the market today are designed to help you work out aerobically and work major muscle groups at home, at your convenience, and in any kind of weather. Available computerized aerobic machines include bicycles, treadmills, and rowing, cross-country ski, stair-stepping, and climbing machines. You can progress at your own level over time, the improvement is measurable, and it serves to motivate you.

"Home gym" machines can provide an individualized workout to meet your needs; many provide computerized feedback to insure that you are working out at the appropriate level, providing information for modification of intensity. These machines let you set resistance, and you can also adjust environmental conditions to simplify or intensify a workout. For example, on a treadmill, you can control speed and gradient making the workout more difficult or easy. Feedback from machines includes such information as to the number of calories you expend, blood pressure, your speed, amount of oxygen you consume, time, and distance.

Vogue, April, 1991, (p.282) reports that although many exercisers who were polled

touted at-home workouts, only 15% of those who purchase at-home exercise machines actually use them after the first few weeks. It may be better to rent the kind of equipment you plan to use or try one out for several weeks at a club or center. If you do decide to purchase one, you may want to buy it second hand.

Consumer Reports, Nov.,1990 (pp.748-757) evaluates two types of home exercise machines--exercise bicycles and treadmills--in regard to safety, reliability, comfort, and performance. Exercise bicycles rated include 10 single action models (you exercise your legs by pedaling) and 10 dual action models (you exercise both legs and upper body by pedaling and by pushing and pulling handlebars). Brands are listed in order of estimated quality. Evaluation considers price, resistance features, dimensions, seat height range, smoothness, rigidity of frame, noise, and monitoring ability. Ten rated treadmills are listed in order of estimated quality. Price is given and machines are rated on horsepower, current, speeds, inclines, dimensions, walking belt, safety, comfort, noise vibrations, ease of using monitor, reliability, advantages, disadvantages, and comments. Consumer Reports concluded that home treadmills they tested were disappointing--they were large, awkward to use, noisy, and unreliable--and many have short walking belts and poorly positioned handrails.

Health Club Workouts

You may want to explore joining a health club or your local YMCA or city recreation center to work out on your own. They offer both cardiovascular and strength components and can provide an excellent way to get fit. Many health clubs and centers have aerobic rooms with cycles, rowing machines, cross country machines, treadmills, and stairmasters--equipment which you can use at your own pace and convenience to get a good aerobic workout. You can supplement your aerobic exercise by developing strength and endurance using weight machines.

Advantages--in addition to the great variety of available equipment--are: Many clubs offer a variety of health programs in which you can participate, such as aerobic classes, fitness testing, and nutritional guidance. At your convenience you can workout whenever the center is open (providing it is not too crowded at that time). You are away from interruptions. You don't have to be concerned about weather interfering with your workout.

Disadvantages are: the cost; heavy usage at peak hours, perhaps making it difficult to get the work out you want during convenient hours; and boredom if you don't like working out on machines. Some clubs have installed televisions for people to watch as they work out. Some people read or talk to a friend. Another major problem is that many users don't chart or follow a plan.

It has been my experience that many beginners lack the knowledge and fortitude to establish and carry out an effective program at a center, and don't ask for or get the kind of supervision that they need for success. They "float" from one machine to another, for example, riding the bicycle at a random pace for five minutes for their "aerobic workout," then trying a weight machine at random. They obviously won't achieve fitness unless they, instead, develop and follow an effective workout plan.

Most clubs have qualified trainers who will give you guidance. Be sure to seek

them out, plan your program carefully with their input, and follow it through so you will get the best results.

Before you join a club check to see if it is financially secure, since many clubs go out of business (some rather suddenly). Ask how long it has been operating. Many clubs offer a trial week. Take advantage of this to see how crowded it is when you want to use it, how knowledgeable the trainers are, and the hours they are open. Talk to others in the club about their opinion of the services and caliber. Many clubs offer a variety of packages, some on a month to month basis. Personally, I would be wary of a club that requires signing a contract for over one year. Vogue magazine (April, 1991, pp.181-182) reports that national health clubs which pressure you to sign up for two or three years make money by getting as many people to join as possible, and don't make money from repeat business. In other words, once you sign they won't be as anxious to please you--you are just another number and they make money even if you don't use the club. (Some place the financial contract with a loan company so that the health club gets all of its money up front and the customer owes the finance company.) In contrast, clubs that sell one-year or less memberships (some monthly) survive on repeat business and usually provide better service. The article also stresses the importance of bargaining for a good price. In any event, choose one convenient either to your work or home and visit several to see which one best suits you. (Shape, Jan.1991, pp.99-101, 126, also has tips on how to choose a health club.)

When working out at a club, you still need to be aware of the advice given in the first few pages of this chapter (pp. 95-100). For example, you need to warm up and cool down on your own as well as follow other advice presented here.

Walking Resources

Walking is an excellent activity for those who find aerobics, jogging, and other sports too strenuous. Many fitness specialists and cardiologists recommend fitness walking as a way to better health because it is convenient, accessible exercise and can be done consistently. It is also safe--you avoid stressing muscles and joints.

Dr. Rene Cailliet's (M.D.) book offers a complete fitness program that promotes vigorous walking as the best aerobic exercise, and tells how to gain flexibility and strength, improve and maintain correct posture, eat healthy, and relax. (Cailliet, Rene, M.D., and Leonard Gross. The Rejuvenation Strategy: A Complete Fitness Program for Everyone 35 and Over. Pocket (Simon and Schuster, Inc.), 1987.

For someone interested in beginning a walking program, Prevention magazine sponsors a prevention walking club. Goals are to inspire people to walk everyday, offer easy techniques of comfortable walking, and offer ways to evaluate your progress. To help motivate, the program lets you earn special certificates and patches recognizing time and mileage that you build up during the year. Members receive a packet including a walking log, walker's handbook, bimonthly newsletter, and membership patch and card. Cost of membership is $9.97. They also sponsor walking rallies. You can get information from Prevention Walking Club, 33 E. Minor St., Emmaus, PA 18098.

The September, 1987 issue of Prevention contains an article on walking for weight

loss (pp. 44-50). The author suggests that a person beginning fitness should start out walking for 15 minutes a day, at a brisk pace at which he/she can talk (a pace at approximately 2 miles per hour). Each day a minute is added, eventually working up to over 30-40 minutes a day. Then the pace is quickened. The article cautions the reader to stop if soreness or other problems occur and emphasizes the importance of good walking shoes.

Eventually, for fitness benefits, you need to walk faster at 3.5 to 4 miles per hour. One mile in 15 minutes is a good fitness pace for most people.

In regard to walking pace, American Health magazine (Dec. 1987, p.62) identifies how the American Podiatric Medical Association (APMA) classifies walking styles. (Figures are for a 150 lb person.)

STYLE	MPH	CONDITIONING	CAL.BURNED Per Mile
Strolling	1-2	Non-aerobic pace	100-120
Functional Fitness	2-3.5	Non-aerobic pace	120-140
Walking	4–5.5	Aerobic Pace	120-160
Weight-loaded Walking		(some experts don't recommend for beginners)	170-280
Climbing stairs, hills, mountains		(beginners take slow pace of 2 miles per hour at first).	150-300

The APMA's newsletter, "Foot News" is available at 9321 Old Georgetown Road, Bethesda, MD 20814.

The President's Council on Physical Fitness and Sports publishes a free 15 page guide entitled "Everybody's Walking for Fitness." The brochure-handbook describes how walking as an exercise benefits you, how to set your walking pace, how far and how fast you need to walk, what basic do's and don't to follow in walking, and provides sample stretches for walkers. It includes a presidential sports award fitness walking log and tells you how to qualify for the presidential sports award. The brief booklet is free from the President's Council on Physical Fitness and Sports, Dept. of Health and Human Services, Washington, DC 20001.

U. S. Shoe Corporation reproduced and distributes a booklet, "The Walking Woman," written by Visha Sedlak, a world-ranked racewalker. The 40-page booklet provides important information for anyone interested in walking as a way of exercise, discussing the pace you need to set to get benefits, techniques for proper walking, injury prevention, environmental concerns, stretching, myths about walking, and more. It is available from U. S. Shoe Corporation, One Eastwood Drive, Cincinnati, OH 45227.

Mazzola corn oil offers a booklet of guidelines for a beginning walking program. To order, send 25 cents to Mazzola Health Walk Handbook. Dept. HW-T, Box 307, Coventry, CT 062238.

Gilda Marx recently produced a video designed to help people of all ages and fitness levels learn to walk aerobically to gain cardiorespiratory benefits. The tape includes 10 minutes each of warm up and cool down stretches. Depending on a person's fitness level, they can walk from a 20-minute beginning level to over 80 minutes for advanced levels. The video is accompanied by a 20-page illustrated booklet and is available for $14.95 wherever Marx products are sold.

You may want to get a copy of the bimonthly periodical, The Walking Magazine (Walking Inc., 911 Harcourt St., Boston, MA 02116; 617-266-3322). The magazine offers broad coverage in relation

to walking, such as fitness and health, nutrition and weight control, fundamentals of walking, world walking tours and journeys, walking events, clothing, and shoes.

Cycling

The June, 1988, issue of Shape magazine provides an up-to-date guide for beginning an aerobic cycling fitness program (pp. 119-123). It contains concise information on how to purchase a bike and accessories, offers techniques for aerobic cycling, presents safe rules for cyclists, and outlines a long term aerobic cycling program.

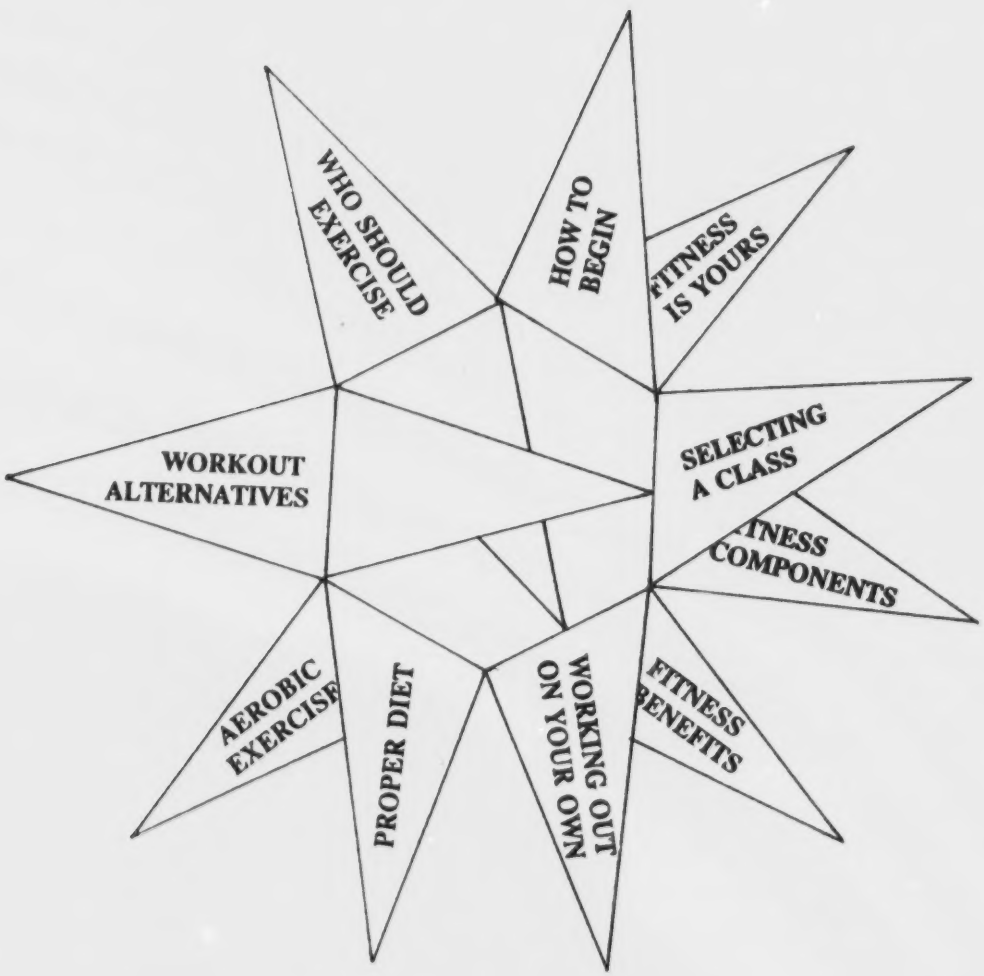
COMMIT YOURSELF TO EXERCISE

Each time you work out, give yourself some positive self-talk. For example, "You did great, (say your name); you walked for 30 minutes today." Each time you work out, congratulate yourself.

Make fitness a natural and deeply ingrained part of your life and your appearance, health, and state of mind will be better.

YOU CAN DO IT!

10. WHAT ARE THE BASICS OF A PROPER DIET?



10. WHAT ARE THE BASICS OF A PROPER DIET?

Throughout Chapter 10, a variety of opinions are presented, some differing. For example, authorities differ about the maximum percentage of fat that we should consume daily. All resources mentioned here offer guidelines and ideas healthier than the average American diet. I believe it is important to identify the options and let you make your own decision as to how stringent you want to be. Research in nutrition provides us with new information daily. The most up-to-date nutrition information available at the time of this writing is presented here.

This chapter synthesizes essential recommendations from leading health agencies (such as the U.S. Department of Agriculture 1990 Dietary Guidelines for Americans; American Heart Association guidelines; recent National Research Council Committee on Diet, Health, and Cancer "Diet and Health" report; U. S. Surgeon General's report on "Nutrition and Health," 1988 (Public Health Service, U.S. Department of Health and Human Services) and describes my nutrition philosophy.

While nutrition is much too complex to fully deal with in one chapter, it is, nevertheless, such an important part of fitness that this book would not be complete without presenting core information that you need to know to achieve and maintain good health and fitness.

PROPER DIET AND EXERCISE ARE COMPANIONS

Diet and exercise are companions for maintaining good health. Good nutrition plays a major part in all fitness elements.

Basically, the benefits gained by aerobic training (see Chart, page 32) also are gained by good nutrition. The two combined are even more powerful--promoting good cardiovascular health, a strong skeletal/muscular system, fat loss and weight management, improvement of the immune system, prevention of diseases (such as heart disease, diabetes, arthritis, cancer...), slower aging, stress reduction, increased energy to accomplish lifetime goals, improved appearance, and reduced medical costs. (Examples: exercise increases high density cholesterol ratio--the good kind--while healthy eating helps reduce low density cholesterol--the bad kind; exercise promotes strong bones while food high in calcium builds strong bones; exercise burns calories and helps speed metabolism while proper eating helps reduce caloric intake--and both foster weight loss.)

When aerobic exercise began to be popular about 20 years ago, it was treated in isolation from nutrition. For many exercisers, it still is! Idea Today (March, 1990, p.30) reported on a study conducted by Harris and Associates for Prevention magazine, based on interviews with 1,250 adults, showing that regular exercisers are not necessarily careful about their diet. In fact, it is estimated that 68 million adults "work out regularly, but maintain poor nutritional and health habits." I have seen evidence of this in my teaching experiences. Many exercisers do not believe that good nutrition is all that important.

One of the first to recognize nutrition and exercise as partners was Nathan Pritikin--a prevention-oriented forerunner in nutrition. Pritikin stated that exercise trains your heart muscle to be strong, but emphasized that exercise needs to be accompanied by healthy eating to avoid building up fatty deposits (plaque) on the lining of blood vessels supplying the heart, thereby leading to chronic heart disease and defeating the long-term benefits of exercising. (Pritikin, Nathan, pp.64-66.)

James Fixx, former runner, was an example of an athlete who believed that running and exercising offered protection against chronic heart disease. He had several major risk factors--a family history of coronary disease, high cholesterol, and a smoker before he began running. Pritikin warned him about his risk factors, advising him to eat a very low fat/low cholesterol diet to safeguard against heart disease. After Fixx's death, occlusive artery disease was found in the autopsy. Pritikin noted that this athlete's cholesterol was high. (pp.64-67). Some people still believe the myth that you can "run off" or "burn off" a high fatty diet.

Pritikin stated that if you don't eat a healthy diet, there is little protection against heart or other diseases. Pointing out that your body benefits from exercise, he cautioned that you need to get your diet under control; that neither diet or exercise should be undertaken to the exclusion of the other. (p. 64.)

Supporting Pritikin's belief is a recent article in the Physician & Sportsmedicine by Dr. Bryant Stamford, summarized in Shape magazine (Nov. 1990, p.34). Stamford's thesis is that exercisers who eat high fat diets are at risk for heart disease. He cautions that although exercise helps burn body fat, it does little to lessen low-density lipoprotein (LDL) cholesterol, which is directly related to the amount of saturated fat you eat (see pp. 124-126 on cholesterol and Dr. Weil's statement). Stamford states that "If optimal health and a slender physique are your goals, a lowfat, high carbohydrate diet coupled with mild, comfortable exercise will accomplish much more than vigorous exercise coupled with a high fat diet."

The value of good nutrition is touted everyday now in the press, TV, articles, and books, and it is impossible to doubt its worth. The American Heart Association, American Cancer Society, National Cancer Institute, and university and federal researchers stress the importance of good nutrition.

It is estimated that diet contributes to about 35% of all cancer deaths. It is recommended that Americans eat more complex carbohydrates (fruits, vegetables, high-fiber cereals, whole-grains) and avoid foods high in fat and salt. (American Journal of Public Health, March, 1988, Vol.7, No.3, pp. 282-286.) [Note that this diet is preventive against other chronic diseases as discussed on pp. 5-6, 26.]

The U. S. Surgeon General's 1988 report (based on recommendations made by approximately 2,000 research studies issued by other federal and private agencies) emphasizes that the typical high fat American diet contributes in a major way to 5 of the 10 leading causes of death in the U.S. Emphasizing that changes can improve health, he recommended eating less fat and controlling calories to reduce risks of chronic disease (heart, cancer, stroke, diabetes, and gastrointestinal).

As further evidence of the importance of nutrition, the wholistic role of fitness and nutrition in health concerns of the United States was emphasized at the second Summit for Health and Well-Being, held in Washington, D.C., February, 1989, attended by over 130 prominent health-related organizations representing 15 million members. The primary goal of this group is to decrease fragmentation in the health and fitness field.

Prevention magazine, in an article forecasting fitness and health in the year 2,000, predicted "Eating high-fiber cereals, low-fat dairy, and lots of fruits and vegetables will be considered almost as important to cancer prevention as not smoking is now." (Jan., 1990, p.46.)

Proper nutrition is essential--it optimizes your body functions, reduces your risk of develop-

ing degenerative diseases and ailments, and helps regulate your weight. Healthy eating will make you less fatigued and more energetic, your endurance and performance will improve, you will have less risk of degenerative diseases, better mental acuity, and longer life. (*Sounds great, right? Who would turn down such an opportunity?*)

MODERATION

When changing your diet, moderation is the key, if you have no serious health problems that require immediate stringent diet changes. It is better to change your diet slowly, adding new foods gradually. You may, for example, be allergic to some foods, in which case, if you consume large quantities, you may have reactions. Also, the gradual approach helps overcome your addictive eating habits, resulting in better behavior modification and in healthy eating over a lifetime.

Start with one goal to make better eating habits unfold for you. Most authorities suggest that you cut down on fats thereby reducing calories and sugar (much of which tends to be in desserts) at the same time, and increasing your complex carbohydrates which have more fiber. When you must eat foods with fat, eat smaller portions and less frequently.

Authors of nutrition books acknowledge the importance of forgiving yourself if/when you slip and over-indulge in unhealthy foods. This is natural when you begin any new program. They advise not berating yourself, and to simply resume eating right, which is how you progressively improve. Robert Pritikin recommends striving for *progress*, not perfection.

LEARN ABOUT NUTRITION! REFERENCES TO GOOD NUTRITION BOOKS

If you are serious about being healthy and fit, it is important to learn and understand the basics of nutrition to guide your personal, daily eating. Go to your library or bookstore and read or purchase one of the many excellent books on nutrition listed in the matrix, p.191, and abstracted in the Appendix. These books offer practical nutritional advice.

As you probably know, many good articles on nutrition appear in newspapers and magazines. Learn all you can about healthy eating when the opportunity arises. Since research on nutrition is continual and new information is always coming out, you need to stay informed, educate yourself about good nutrition, arrive at your own opinions, and make your own decisions.

One well-founded book on nutrition is The New American Diet. (See abstract in the Appendix.) This lifetime eating plan offers a low-fat, low-sodium, low-sugar diet and advocates a diet high in natural complex carbohydrates. After assessing current eating habits, the reader gradually changes habits over several years, progressing through three phases. A cookbook for the plan is included.

A moderate, but good, book is Jane Brody's Nutrition Book. Her thinking is in line with the American Heart Association's (AHA) guidelines. Another book in line with the AHA guidelines is Dr. Robert Gleser's HealthMark Program for Life, which offers an excellent low cholesterol, low sodium diet that is to be accompanied by exercise. Two stricter books are those by Robert Pritikin and Bailey. both of whom suggest cutting fat well below the level recommended by AHA. (Pritikin recommends that 10 percent of daily calories be from fat. These guidelines for healthy eating offer the more ideal guidance, but some authorities believe that the Pritikin diet is too stringent regarding fat intake. Abstracts of Pritikin's, Brody's, Gleser's, and other

nutritionists' books are contained in the Appendix.

Data in a recent study by Dr. Dean Ornish shows the importance of cutting fat to 10% intake of total calories. Ornish compares two groups of people: one reduced fat intake to 10% of total calories; the other group cut fat intake to 30%. Results showed that coronary artery blockage was reversed in 82% of the people limiting fat intake to 10%, while most of those who cut fat to 30% developed more coronary artery blockage. (Ornish, Dean. Dr. Dean Ornish's Program for Reversing Heart Disease. Random House, 1990.)

There is a difference of opinion on this matter. In any case, you will want to keep your fat intake to 30% or below of total calories, starting out with a moderate approach and gradually working toward the ideal.

Many recent cookbooks contain healthy recipes. A gem that offers over 175 heart-healthy gourmet recipes (low in fat, cholesterol, sodium, and calories) is The Gourmet Gazelle Cookbook by Ellen Brown (Bantam, 1989). Preparation time is given for each recipe. Most take 20 minutes or less, and can be made in advance. Nutritional breakdown is given for amounts of calories, fat, cholesterol, and sodium. Healthful and helpful information is included: brand names of ingredients such as oils, spices, mustards, called for in the recipes; suggestions for converting old recipes to healthy ones; and techniques for special food preparation; i.e., roasting peppers.

The U.S. Department of Agriculture's Human Nutrition Information Service (HNIS) publishes numerous consumer booklets which contain practical advice on nutrition to help people eat healthier every day. Topics include: shopping for and preparing foods, planning menus, making lunches, eating out, food sources of nutrients, and calories and weight. For a complete list of materials, or for more information, write: U.S. Dept. of Agriculture, Human Nutrition Information Service, 6505 Belcrest Road, Hyattsville, MD, 20782, or call (301) 436-7725.

Nutrition is a highly personal matter. Individual nutritional needs vary depending on such factors as genetics, body chemistry, age, medical history; therefore, the generalizations that I make may not be applicable for all. Certain general principles that are common to most practical nutritional advice are offered.

Because so many different factors affect each individual--including specific nutrients that we need--you may eventually want to consult a nutritionist (Registered Dietician--R.D.) so you can have the benefits of good nutritional eating suited to your own requirements. R.D.s are recognized by the medical community as meeting requirements in nutrition and food science. I offer generalized advice; for specific advice see your nutritionist or physician.

NUTRITION 'HOTLINES'

Prevention magazine reports that nutrition information centers across the country employ knowledgeable health professionals who can answer your questions about food and health, send you written information, or direct you to an agency who has staff to answer questions. Most often there is no charge.

Centers are usually located at State Departments of Health or nutrition departments at universities and hospitals. To locate a nutrition center near you, call the County Cooperative Extension Service, a registered (R.D.) or licensed dietician (L.D.), or a university's food and nutrition department. If these don't provide a nutrition information service, they can probably direct you to the nearest nutrition information center or knowledgeable source. Prevention, May 1988, pp.34-38, 107-112).

The American Dietetic Association operates a Nutrition Infocenter staffed by nutrition experts to provide consumers with answers and/or information resources. Address your questions to: National Center for Nutrition and Dietetics Infocenter, 216 West Jackson Blvd., Suite 800, Chicago, IL, 60606-6995, or call the Association at 312-899-4854. The American Institute for Cancer Research has a nutrition hotline (800-843-8114).

Two other groups which may offer help with diet and health questions include your local American Diabetes Association and American Heart Association.

KEY INFORMATION

The remainder of this chapter presents core information on nutrition in terms of needed nutrients, variety and food groups, anti-aging foods, American Heart Association guidelines, cholesterol, moderation in changing diet, vitamin supplementation, do's and don'ts for healthy eating, and the importance of drinking enough water.

NEEDED NUTRIENTS

What nutrients do you need, and in what quantities? Nutrients are defined below. Then, recommended quantities are presented.

Your body needs ***seven basic nutrients***, described briefly here. Many books provide more detailed information. Some of the following definitions of nutrients are from The Mosby Medical Encyclopedia, edited by Walter D. Glanze. (See full bibliography in reference section under Glanze, Walter D., Ed., and Others.) In this section, I have referred to the citations as Mosby.

1. Water. Water is necessary for all living things--most of which are comprised of over 70% water. (See p. 139 for functions of water and drinking water use during exercise).

2. Protein. Mosby notes (p.606) that protein is the building material for human tissues--muscles, blood, skin, hair, nails, and inside organs. Mosby defined proteins as "any of a large group of complex, organic nitrogen compounds. Each is made up of linked amino acids that have the elements carbon, hydrogen, nitrogen, and oxygen." Out of 22 amino acids identified as necessary for body growth, development, and health, the body can make 14, called nonessential, while the other eight must be obtained from food--called essential.

Food sources with both essential and non-essential amino acids are called complete proteins. Most animal-origin foods (meat, poultry, fish, milk, cheese, eggs) are complete. Incomplete proteins have only small amounts of essential amino acids. These come from grains, seeds, and legumes (i.e., navy beans, chick peas, soybeans, split peas). It is said that by combining different incomplete protein foods, however, you can create complete proteins. For example, legumes and grains make complete proteins, as do vegetables combined with nuts. Authoritative opinions vary on the exact interactions of incomplete proteins.

3. Carbohydrates. Carbohydrates, "a large group of sugars, starches, cellulose, and gums that all contain carbon, hydrogen, and oxygen in similar portions," are the main source of energy for all body functions. Carbohydrates are produced "by all green plants...and can also be made in the body. Lack of carbohydrates can result in fatigue, depression, breakdown of body protein for energy, and mineral imbalance." (Mosby, p.122.)

4. Fats. Fats are lipids or fatty acids that occur in many forms. They have the same structural elements as carbohydrates but are linked together differently with a higher ratio

of hydrogen to oxygen. Fats are a source of efficient form of storable energy for the body (containing more than twice as many calories per gram as sugars). (Mosby, p.285.) They cushion and protect body organs, muscles, bones; help regulate body temperature, insulate the body against rapid heat loss; help synthesize fat-soluble vitamins; play a role in formation of certain hormones, and "combine with other nutrients to form important structural compounds (blood lipids, steroids, bile, cell membranes, vitamin D)." (AFAA, p.86,87)

Although saturated fatty acids are not needed, linoleic acid (vitamin F), an unsaturated fatty acid, is essential for normal nutrition. You need only one tablespoon per day, however. Good sources of linoleic acid include polyunsaturated vegetable oils--linseed, safflower, sunflower, soybean; wheat germ; and nuts--peanuts, walnuts, pecans, and almonds; sunflower seeds; and avocados.

5. Vitamins. Mosby (p.781) defines vitamins as natural compounds (other than carbohydrates, proteins, and fats) needed in small quantities for normal bodily functions. The body does not produce vitamins. Almost all vitamins must be acquired from the foods we eat or supplements. Vitamins help convert foods to energy for growth and development and other functions. (See pp. 126-127). No one food contains all the vitamins we need, so eating a variety of foods is necessary.

6. Minerals. Minerals--inorganic elements essential to man--regulate many body functions. They are part of all body tissues and fluids and important factors in keeping physiologic process going; act in nerve responses, muscle contractions, and changes of nutrients in foods; regulate electrolyte balance and the making of hormones; and strengthen skeletal structures. (Mosby, p.472.)

7. Fiber. Dietary fiber is defined as those components of food that cannot be broken down in the digestive tract. Fiber passes through our digestive tract into the large intestine. Although not actually a "nutrient", fiber plays a vital role in diet. It counters the problem of constipation, helps weight control because it yields few calories, and helps regulate blood-sugar levels. (See pp. 123-124.)

Having summarized the seven basic nutrients, the next essential information is: what are the optimal sources and quantities of these nutrients that you need for good health? Below are two charts containing information. The first offers condensed "nuggets" about nutrient quantities, and the second gives more detail on nutrient sources and quantities.

Table 5:
NUGGETS ABOUT AMOUNTS of NUTRIENTS & CHOLESTEROL
(Approximations)

Nutrients	Daily Amt. Needed	Limit
Water	8 glasses (2 qts.) or more	—
Protein	Women 40-50 grams Men 50-60 grams	15% of total calories
Carbo-hydrates	8 servings Approx. 55% tot.cal's	—
Vitamins & Minerals	(See an RDA chart)	—
Cholest-erol	—	100 mg per 1,000 cal; 300 mg.daily. (Some authorities say less.)
Fats	15 grams linoleic acid adequate (See chart, p.133, for allowable total grams fat)	30% total calories (less is better)
Fiber	10-13 grams per 1,000 cals. Total 20-35 grams	
Sodium	1/4 teaspoon (500 milligrams)	1 gram (1,000 mg. per 1,000 calories. Don't exceed 3 grams per day, or 1/2 to 1 tsp.
Calcium	1,000 mg or more	2,500 cal. Potential danger of developing kidney stones. (See p.30-31.)

Chart B: A GUIDELINE CHART OF 7 BASIC NUTRIENT SOURCES AND QUANTITIES

This chart provides a synopsis of the function, food sources, recommended daily intake, recommended kinds of nutrients, and other pertinent information for each of the seven basic nutrients. The chart provides good, concise information... so scan it carefully.

7 Basic Nutrients	Functions	Food Sources	Other Nutrients In	Recommended Daily Intake	Recommended Kinds of Nutrients	AHA Guidelines	Calories Per Gram
Water	Carries nutrients to cells & removes waste. Aids in digestion & absorption of food. Lubricates joints in body. Regulates body temperature.	Tap water Beverages Food Water is principal constituent by weight of almost all foods.	Minerals (varies by locale--typically sodium, calcium, magnesium).	8-10 glasses Replace water lost by exercise. (See p.139.)	Preferably water (avoid caffeinated drinks, i.e., coffee, tea, colas are diuretic and cause you to lose water).	--	--
Protein	Building material for muscles, blood, skin, hair, nails, organs.	Milk, cheese, yogurt, meats, poultry, eggs, fish (complete). Grains, legumes, seeds, nuts (incomplete).	Milk group: calcium, Vits. B&D, Meat & legumes: iron, magnesium, selenium chromium, Vit. B. Incomplete contain fiber.	(Depends on age, size, health) Typically--woman 40-50 grams; man 50-60. (See pp. 119-120.) Milk & meat: 2 each daily servings (tot. 4).	Low or non-fat milk products Lean, small portions of meat. Legumes w/ grains.	15% or less of calories	4
Carbohydrates	Main energy source for muscular work & all body functions. Stable flow of fuel.	Fruits, vegetables Grains, cereals, breads.	Fiber, Vit. A&C, folic acid, iron, trace minerals, Fiber, Vit. B&E, trace minerals.	4 servings (total 8).	Eat from a variety of complex carbohydrates.	55%	4
Fats	Efficient form of stable energy. Cushions organs. Insulates the body and helps maintain body heat. Helps regulate hormones. Helps synthesize fat-soluble vits.	Butter, lard, cooking oils, meats, whole milk or 2%, many protein foods (cheese, nuts).	Vit. F (linoleic acid in unsaturated fats). Saturated fats not needed in diet.	15 grams (1 tablespoon) per day is adequate.	10% saturated 10% monounsaturated 10% polyunsaturated	30% (Less is better.)	9
Vitamins	Needed for bodily functions to sustain life. Helps convert food to energy.	Wide variety of foods. Supplements.	Vits. are natural compounds that must be gotten from diet or supplements (such as A, Bs, C, D, E, F, Ks, P.	Important to eat a variety of foods. Multi-vitamins & minerals.	Eat a variety of foods. Supplements, if necessary. Depends on indiv. needs.		
Minerals	Help regulate many body functions.	Same as above.	Inorganic substances: such as macrominerals: calcium, phosphorus, magnesium, potassium, sulfur, sodium chloride. microminerals: trace-iron, zinc, selenium, molybdenum, copper, chromium, fluoride, magnesium, iodine.	Same as above	Same as above		
Fiber: Soluble	Lowers cholesterol. Helps regulate blood sugar.	Oat bran, barley, fruits & vegetables, dried beans, greens and pectins.	Dietary roughage (no nutrients).	Total of at least 30 grams (NCI). 10-13 grams per 1,000 calories OR higher amount (40 grams or more) for some w/high cholesterol, diabetes.	Fiber foods have varying properties of both kinds of fiber. Obtain from natural foods, if possible.		
Insoluble	Increases water-holding capacity of stool. Reduces risk of colon cancer.	Whole wheat products, nuts, vegetables.					

BEST COPY AVAILABLE

EAT A VARIETY OF FOOD

To stay healthy, your body needs over 40 different, specific nutrients which are in foods normally eaten. Since no single food is perfect or supplies all the essential nutrients in the amounts you need, eat a variety of foods to ensure an adequate diet. There is a high probability of consuming adequate quantities of essential nutrients, when you select nutrient dense food for the amount of calories you eat from the four basic food groups. There is nothing "sacred" about the concept of the four food groups--it is familiar to most people and therefore is a convenient way to organize eating habits. A vegetarian can choose beans, peas, and nuts from the meat group and exchange soy or almond milk for the milk group.

You can choose the following portions from each of these groups daily, **but the foods should be healthful--low in fat, cholesterol, sugar, sodium, and high in complex carbohydrates and fiber.**

Table 6: AN OVERVIEW OF THE FOUR FOOD GROUPS

FOOD GROUP (sample servings in parentheses)	**SERVINGS DAILY**	**NUTRIENTS**
Dairy Products. i.e., Milk/ Cheese/ Yogurt (1 cup) (2 oz) (l cup)	2	protein, calcium, vitamins B and D, fats.
Meats/Poultry/Eggs/Fish/Legumes (3 oz) (3 oz) (l) (3 oz) (l cup)	2**	protein, iron, magnesium, selenium, fats, chromium, vitamin B (Legumes contain fiber).
Fruits / Vegetables (1 cup fresh; (l/2 cup cooked)	4-5	carbohydrates, fiber, vitamins A & C, folic acid, iron, trace minerals, calcium.
Grains/Cereals/Breads (Whole Grain) (l/2 cup (l/2 cup)(1 slice) (1 oz) cooked)	4-6	carbohydrates, protein, fiber, vitamins B & E, trace minerals, some iron.

** Some authorities suggest 3 ounces.

AHA recommends the following guidelines based on total calorie intake from the four food groups (i.e., total calories taken in should come from these percentages of fat, protein, and carbohydrates): [Total fat should be 30% or less; i.e., 45 grams of fat for a 1,500 calorie diet, 60 grams for a 2,000 calorie diet, and so on. See p. 133.]

Table 7: AHA GUIDELINES FOR FAT INTAKE

% of kind of fats	Sources	Effect on Cholesterol	Degree of Healthiness
10% saturated fats	Animal products--meats, eggs, dairy products, butter (almost 70% sat.fat; lard 40%) Some plant products, i.e.,coconut oil (87% sat.fat), palm kernel oil (82% sat. fat; palm oil 50%) Unsaturated fats hardened by saturating with hydrogen (hydrogenated oils)	Tends to raise	Least healthy
10% polyunsaturated	vegetable oils--soybean, sesame seed, cotton seed, corn oil, safflower, sunflower, and the omega 3s found in fish--mackerel, salmon, sardines	Tends to lower (lowers both LDL & HDL)	Healthier than saturated fats
10% monounsaturated	oils such as olive, canola, peanut, avocado	Tends to lower LDL cholesterol. Does not lower HDL.	Healthiest

(See "do's" for controlling fat intake and for best oils and how to use them, pp. 133-135.)

While AHA recommends a maximum of 30% of the calories we take in come from fat, other health professionals recommend lower percentages of 20% max. The strictest believe that the goal should eventually be 10 to 20% maximum. For idealists the goal is to keep fat levels as low as possible.

15% PROTEIN (or less)

Many authorities in nutrition believe that Americans consume too much protein, a nutrient which is often high in both calories and fat. Further, consuming too much protein can be harmful to your health--for example, it overworks the digestive system, can foster bone calcium loss and is hard on liver and kidneys, among other problems. How much do we need? The Recommended Dietary Allowances (RDAs) for protein--given in grams--is based on a person's age and IDEAL body weight. (If you are not at your ideal body weight and want to determine protein need, see p.150 on body composition). Generally, approximate RDA's for adult women are 44 grams; for adult men 56 grams.(How you translate specific foods into grams of protein is described on the following page).

Jane Brody (p. 48) lists the grams of protein you need to eat according to your ideal body weight and suggests multiplying the number of grams by pounds you should weigh. The chart is arranged by ages and includes needed grams of protein for infants, children, pregnant women, nursing women, and other adults. For adults, the number of grams per lb. of ideal body weight is 0.36.

Using this formula, if you want to find out how much protein you should eat per day multiply 0.36 x ideal weight. For example, if your ideal weight is 100 lbs. multiply this by 0.36 and you need 36 grams of protein per day; if 110 is your ideal weight you need about 40; a 150 lb. person needs 54 grams daily; someone weighing 175 needs 63, and so on. Generally you can assume that a woman needs about 40 to 50 and a man from 50 to 60 plus or minus some grams.

Brody's informative chapter on protein (pp.31-54) discusses such things as how to get good protein, and lists protein food sources.

Some nutrition authorities suggest that 15% of our daily total calories from protein should be an upper limit and that the average person does not need that much protein daily. Dr. Blackburn (Prevention, December, 1988, p. 29 & 30) notes that the amount of protein for the typical adult required for good health is only 6-8% of our daily calories. Further, suggesting the mixing of animal and vegetable proteins, because it can be used more efficiently for fuel or to build tissue, he advises that no more than half should come from animal sources.

Although AHA recommends that we obtain approximately 15% of our total calories from protein, the need can vary. For example, you may need more protein in your diet if you have an injury involving tissues, if you are pregnant or nursing, or are ill. Some research indicates that athletes need more protein and advocate approximately one gram of protein for every two pounds of body weight, which for the average person would be about 70 to 100 grams per day.

How do you determine the grams of protein obtained in given foods? When foods are not packaged and labeled with information on nutrients per serving, it is difficult to know how much protein is contained in a serving. Packaged foods list the amount of protein contained in a serving, for example, 1 cup of milk provides 8 grams of protein, 1/2 cup cottage cheese 14 grams. For foods that don't list the amount of protein, such as meat or vegetables, etc. you will need to locate a source that lists amounts of protein in different foods. Many cookbooks list the amount of protein in foods.

Brody has a two-page listing of foods and the amount of protein they contain. She mentions that the U.S. Dept. of Agriculture publishes a handbook of almost 2,500 food items, listing the kind and amount of nutrients in typical-sized servings.

The Complete Book of Food Counts (by Corrine T. Netzer, Dell Publishing, 1988) lists over 8,000 foods, providing information on the number of calories and the amount of carbohydrates, protein, sodium, fat, and fiber in each food.

55% CARBOHYDRATES

Most nutritionists advise us to get most of our calories from complex carbohydrates (**unrefined** grains, vegetables, and fruits rather than simple sugars)--the main energy source for muscular work. "Carbos" are broken down more slowly in the body, resulting in a more stable flow of fuel. Also, carbohydrates have less than half the calories of fat, so you are able to eat more food and feel full. They also have more fiber than fats. We get more than double the calories from fat than we get from protein or carbohydrate:

1 gram fat = 9 calories
1 gram protein = 4 calories
1 gram carbohydrate = 4 calories

Following is a list of foods high in complex carbohydrates, fats, and protein.

Table 8: Foods that are high in complex carbohydrates, fats, and proteins:

CARBOHYDRATES (daily guideline = 55% or more)	FATS (daily guideline = 30% or less)	PROTEINS* (daily guideline = 15% or less
VEGETABLES	BUTTER, LARD	MEAT
FRUITS	MARGARINE	FISH
RICE	COOKING OILS	POULTRY
BEANS	MEAT	PEAS
PASTA	EGG YOLKS	BEANS
BREAD	MILK (Whole/2%)	NUTS
GRAINS (Barley...)	CHEESE	
CEREALS	NUTS	

*Since many protein foods are also high in fat, choose small, lean portions of meats. Legumes, however, are low in fat and a good source of protein when combined with grains.

AVOID EXCESS FAT, SUGAR, AND SODIUM.

Reasons to limit your intake of these three items are summarized in the following outline.

Excess Fat:
- o provides excess calories you don't need, leading to overweight and obesity, increasing your risk of heart disease, diabetes, and high blood pressure.
- o increases risk of cardiovascular disease. High levels of fat in diet lead to high level of fat in bloodstream, associated with atherosclerosis, and raise LDL cholesterol.
- o increases risk of certain kinds of cancer (some studies indicate that as many as 35% of deaths from cancer can be attributed to too much fat in the diet).
- o decreases immune system--affects immune cell behavior, suppresses natural killer (NK) cell activity. NKs hunt through the body to fight viruses and cancerous cells.

Excess Sugar:
- o provides you with nutrient-less (empty) calories. Excess calories lead to being overweight and obese, increasing your risk of heart disease, diabetes, and high blood pressure.
- o is most likely found in fatty foods (cookies, cakes, pies), so is double jeopardy.
- o causes mood swings. Sugar is metabolized and enters the bloodstream quickly, but about an hour later, the blood sugar drops...leaving you in a slump and increasing the appetite.
- o stresses the pancreas and affects blood sugar levels.
- o is a leading cause of tooth decay.
- o is said to cause chemical changes which impair the functioning of white blood cells that lowers body resistance and makes it more difficult for the body to heal.
- o increases the amount of triglycerides (fat in the blood) which promotes cardiovascular disease.

Excess Sodium:
- o can cause high blood pressure (HBP) in some individuals who are genetically predisposed. HBP is associated with heart and kidney disease and strokes.
- o causes abnormal fluid retention and results in bloating.
- o may be responsible for migraine headaches in some people; cause increased loss of calcium; and impair athletic performance by drawing water out of muscle cells.
- o can speed development of atherosclerosis, according to some. (Hellerstein, p.139.)

ANTIOXIDANTS: FIGHT AGING AND CANCER, AND BOOST IMMUNE SYSTEM

More and more references to anti-aging foods are appearing in the media. One good source is Rodale Press's Future Youth: How to Reverse the Aging Process. This large volume contains an unusual chapter on the topic of countering the aging effects of poor nutrition entitled "Nutrition for Healthy Aging." (Rodale Press, Emmaus, PA, 1987, pp. 305-316). The chapter points out that although nutritional needs for older adults have not yet been set, nutritional needs **increase** as you age and that you need to eat a variety of foods to get all the needed nutrients.

The thesis of the forementioned chapter is that "free radicals" (chemicals which damage the body's cells and tissues, as described by many authors) cause much of the degeneration occurring with aging and disease. Certain vitamins and minerals, however, work as antioxidants to "combat" free radicals. Specifically vitamins: **E** (found in wheat products, including wheat germ, whole-grain cereals, whole wheat, soybeans, broccoli, eggs, Brussels sprouts, and spinach and other greens); **C** (found in citrus fruits, potatoes, tomatoes, berries, and green and leafy vegetables); and **beta-carotene** (found in carrots, yams, pumpkins, squash, sweet potatoes, spinach, broccoli, cantaloupe, papaya melon, peaches, and are often yellow in color) and minerals selenium and zinc) work as antioxidants. Food sources for selenium include wheat germ, grains, cereals, bran, broccoli, onions, meat, seafood, tuna fish, and tomatoes; food sources for zinc include meat, wheat germ, brewer's yeast, herring, clams, non-fat dry milk, yogurt, and eggs.

Amounts of vitamins and minerals needed, as well as foods they occur in, are given in the Rodale book chapter. The importance of a diet low in fat (fats are breeding grounds for free radicals), sugar, and salt, and a diet high in complex carbohydrates and fiber is emphasized.

Two other references which support the free radical antioxidant theory report that these vitamins and minerals help fight free radicals. American Health reports on university studies that demonstrate the anti-aging role of vitamins C, E, beta-carotene and mineral selenium as free-radical scavengers which show their potential to also fight disease such as cancer and heart disease. (July/August, 1989, pp.67-68).

An article entitled "Nutrients for the '90s," by Jeffery Bland predicts that in the '90s more research will show the link between antioxidant vitamins A, C, E, and the mineral selenium, and longevity. (Delicious, Nov./Dec., 1989, p. 10).

To boost your immune system, help fight cancer, Dr. Weil offers a daily formula for taking antioxidant supplements:

VITAMINS	AMOUNT	Amount for Those at High Risk
Beta-carotene	25,000 IU	50,000
E	800 IU (take with meals that have oil)	
C	3,000 milligrams (take throughout the day)	
Selenium	50 to 100 micrograms	100 micrograms

Weil, Andrew, M.D. Natural Health, Natural Medicine: A Comprehensive Manual for Wellness and Self-Care. (Houghton Mifflin Co., 1990, pp. 184-186).

The Pritikin Lifetime Eating Plan minimizes the intake of polyunsaturated fatty acids (a primary source of free radicals) and promotes the eating of nutritional foods with an abundance of vitamins C, E, beta-carotene, and selenium to head off free radical reactions and to promote a long life, free from disease. (Pritikin, R., pp. 47-48.)

THE IMPORTANCE OF FIBER IN YOUR DIET

It's important to make sure that you get enough fiber in your diet. You need both kinds--soluble (dissolves in water) and insoluble (does not dissolve during the digestive process).

Soluble fiber (found in foods such as oats; oat bran; dried beans such as kidney, pinto, garbanzo, great northern, and others; nuts; brown rice; barley; prunes; some fruits with pectin; and some vegetables) has been shown to lower cholesterol and also helps blood sugar to rise at a steady pace, thereby helping to keep your energy level stabilized. Oat bran (a very good concentrated form of soluble fiber) can be substituted for part flour in recipes for muffins and quick breads and can be used to bread fish or poultry.

Insoluble fiber (found in whole wheat products, wheat bran, and in stalks, stems, and peels of fresh fruits and vegetables) absorbs water as it moves through the digestive tract, adding bulk to body wastes and speeding up elimination. This type of fiber reduces the risk of cancer-causing toxins building up in the body and helps to excrete toxins from the body.

The chart below describes the two types of fiber.

Table 9: TWO TYPES OF FIBER

TYPE	DEFINITION	BENEFITS	FOODS HIGH IN
SOLUBLE (gums & pectins)	Roughage-- indigestible plant carbohydrates without calories. Bulk wastes left over after normal digestion.	Controls blood sugar levels, lowers cholesterol and blood pressure, thereby reducing risk of heart disease	Oats, oat & barley bran, flesh of fruits pectins, dried beans, dried fruits (dates, figs), vegetables (leeks, onions, asparagus)
INSOLUBLE (cellulose)	(... Above ...)	Aids in elimination of wastes from bowels and reduces risk of colon cancer	Whole wheat products, stems and peels of fruits and vegetables, flesh of some fruits and vegetables, nuts
BOTH KINDS	(... Above ...)	(... Above ...) Foods are filling. Helps prevent chronic diseases (diabetes, cancer, heart disease...)	(... Above ...) Plus dried beans, berries, nuts

NOTE: Fiber foods have varying proportions of both kinds of fiber. Beans and grains are highest in fiber. Eat whole foods in natural state (raw fruits and vegies) and whole grains.

AMOUNT NEEDED: Experts vary on estimated/recommended amounts of fiber needed. As of August, 1990, National Cancer Institute recommends 20-30 grams daily, and no more than 35 grams daily. Some organizations and authorities recommend as much as 40-60 grams daily.

Recent research shows that adequate fiber in the diet reduces blood pressure and tends to produce weight loss, as well as helps prevent chronic diseases such as heart disease, diabetes, obesity, and cancer. (Prevention, Nov. 1987, pp.34-42).

Fiber content changes with the form of food --the more "whole" it is, the more fiber it contains, i.e., eat an apple with skin rather than drink apple juice. Basically, if you eat appropriate servings from the complex carbohydrate groups you will get adequate fiber. *The National Cancer Institute recommends that Americans consume 20 to 30 grams of fiber a day, and no more than 35.* For this amount you can eat 3-5 servings of whole grains, breads, and cereals, 3 servings of vegetables, and 2-3 servings of fruit per day. These foods are lower in calories than fatty foods. Note that fiber itself has no calories, but of course the food you do eat does.The volume of food for the amount of calories is filling, so these foods make you feel full and help keep you from snacking on high calorie, low-nutrient foods later.

Drink plenty of water so that fiber can do its work as a natural laxative.

CHOLESTEROL

High cholesterol levels are associated with an increased risk of chronic heart disease (CHD). There are two sources of cholesterol: dietary--the kind we eat in food --and blood cholesterol--"manufactured" in the body. Dietary cholesterol is a "fat like" substance found in animal sources, oils, and the human body. Cholesterol made in the body is manufactured by your liver. Both types of cholesterol end up in the blood. Cholesterol is essential to cell membranes and nerves and is needed for production of certain hormones, however, your body is able to produce enough cholesterol to meet these needs. Therefore, you do not need (i.e., you should avoid) foods that are high in cholesterol.

Total cholesterol contains both "bad" (low density lipoprotein, or LDL) and "good" (high density lipoprotein, or HDL) cholesterol. Low density cholesterol is made up of a cluster of lipids (fats) surrounded by protein, and is considered "bad" because it accumulates in the walls of blood vessels as plaque and clogs blood circulation, leading to hardening of the arteries (atherosclerosis), or may block the flow of blood and produce a heart attack or stroke. High density cholesterol is considered "good" because it is thought to protect against heart disease by retarding buildup and removing accumulated cholesterol from arterial walls, restoring and improving circulation. Remember that circulated blood is the only means by which you send needed oxygen and nutrients throughout your body! So, keep your circulation in optimum condition.

To find out your current cholesterol level, your doctor can run a blood lipid profile for you. You need to specifically request from your physician that you not only want a reading of your total blood cholesterol, but also want to know the ratio of the bad (low density) to good (high density) cholesterol. To get the most accurate cholesterol measurement, fast 12 hours before a test.

The total cholesterol reading you will be given by laboratories, from your blood test, is in terms of a given number of milligrams (mg.) per 100 milliliters (tenth of a liter) of blood serum. The number will typically be in the range of 150 to 300. Differences of opinion as to what is a healthy, normal amount of cholesterol are as follows: Federal guidelines (new National Cholesterol Education Program--NCEP) which was organized by the National Institutes of Health and others} recommend 200 or less milligrams per

tenth of a liter of blood. Federal guidelines recommend that people with total cholesterol between 200 and 239 restrict their fat intake. In contrast, Pritikin set much stricter standards. He believed that 160 should be a maximum, and suggested keeping blood cholesterol level to 100 plus a person's age. (Pritikin, Nathan, p.65.)

Prevention magazine staff assembled a panel of experts for advice on safe cholesterol level. In the article, the experts say if your cholesterol level is: 200 you are probably safe, 200-240 you have borderline high cholesterol, and above 240 you have dangerously high blood cholesterol. (Oct., 1988, pp. 21-28).

The chart below synthesizes different cholesterol guidelines and shows the wide variability of opinions concerning normal and safe levels of cholesterol.

Table 10:
Cholesterol Guidelines of Various Organizations/Programs
(in milligrams per 10th of a liter of blood)

	Desirable/ Normal	High	Dangerously High
Pritikin/HealthMark	160 max. (100 + age)		
Prevention Panel	200 or less (probably safe)	200-240	Above 240
ACSM		Elevated total cholesterol above 240 and HDL cholesterol ratio above 6 = at risk.	
New American Diet	160-180	200	
National Cholesterol Education Program (NCEP) (organized by Nat.Institutes of Health & other major health agencies)	Under 200	200-239	Above 240

An Acceptable Ratio.

Total cholesterol is not necessarily an indicator of the status of health. Many medical authorities believe that the ratio of low density (LDL) to high density (HDL) is a better indicator of a person's risk for developing heart disease than is total cholesterol. Total cholesterol count divided by your HDL gives you the ratio. A high HDL level--anything over 50--is **good** (provided total cholesterol is not too high).

The ratio of low to high density lipoproteins appears to range between roughly one-and-a-half to six in women and one to eight in men. Authorities say low risk ratios for heart disease are approximately 3.2 to 1 for women and 3.5 to 1 for men. **If your low-to-high ratio (i.e., bad to good cholesterol) is above 6, you are at increased risk for heart attack and hardening of the arteries.**

The American College of Sports Medicine considers those with an elevated total cholesterol level above 240 **and** an HDL cholesterol ratio above six to be at risk for heart disease. This ratio is viewed as a major risk factor. (ACSM, p. 6.)

In regard to intake, AHA recommends limiting cholesterol intake in food to 100 mg per 1000 calories, not to exceed 300 mg per day. Other authorities suggest limiting cholesterol to 100 mg daily. The Barbara Kraus Cholesterol Counter (Kraus, Barbara, Perigee, 1985) lists cholesterol content of thousands of name-brand and basic foods.

If you have high cholesterol and a high ratio of bad to good cholesterol, you need to: (1) avoid eating organ meats, cut down on high-cholesterol foods such as egg yolks and shrimp, limit the amount of red meats and poultry to 6 ounces per day, substitute low or non-fat milk products for creamed cottage cheese, whole milk, hard cheeses, and butter; (2) maintain a low fat diet of complex carbohydrates--fruits, vegetables, grains, cereals, (3) limit daily cholesterol consumption to 300 milligrams or less, (4) switch to lower cholesterol foods such as using egg whites in

place of yolks, substituting olive oil for other oils in cooking, and other tips on cutting fat on pp. 133-135. It's important to cut saturated fat (such as chocolate) for although it has no cholesterol per se, **saturated fat causes the body to produce excess cholesterol.**

Dr. Weil states "controlling cholesterol has more to do with what you don't eat than what you do. The amount of saturated fat you consume is the most direct dietary influence on how much cholesterol circulates in your blood. The most important preventative measure you can take is to reduce the percentage of saturated fat..." (Weil, p.43).

The good news is that cholesterol level can be lowered with a diet low in saturated fat, along with aerobic exercise which increases the high density level, thereby improving the low-to-high ratio--and improving your circulation. Blood cholesterol levels have also been lowered by eating cholesterol-lowering foods, such as soluble oat bran and beans and adding niacin to a person's low-fat diet. (Niacin--vitamin B3--is found in lean meat, white meat of poultry, whole wheat products, wheat germ, brewer's yeast, avocados, dates, roasted peanuts, figs, and prunes). Before adding niacin supplements to your diet, be sure to get your physician's approval and advice regarding the amount you should take.

There are many books on the market which describe how to lower cholesterol. Two are by Kenneth H. Cooper and Robert Kowalski.

A video that deals with lowering cholesterol is Lower Your Cholesterol Now, by Leni Reed. Available from Family Experiences Productions, 1509 Old West 38th St., Suite 4R, Austin, TX 78731. (59 minutes; $43.95.)

VITAMIN SUPPLEMENTATION

Many nutritionists, fitness experts, doctors, and others in the medical field believe that if you eat a well balanced diet you either do not need to take vitamins or that a daily multi-vitamin will suffice. They emphasize that food is the best source of vitamins and minerals. For example, the Pritikin Lifetime Eating Plan is said to fulfill all nutritional needs without taking vitamin or mineral supplements. (Pritikin, R., p.41.)

Others, however, believe that it is almost impossible for us to get all the nutrients we need from the food we eat, for several reasons. First, it takes a lot of knowledge and meal planning to get the "right stuff"--more than most people have the time or opportunity to acquire and put into practice. Second, habitual diets of many people are poor, and they tend to be addicted to foods high in fat and loaded with refined sugars--making it very difficult to change to a diet that will provide sufficient vitamins and minerals. If you drink alcohol, smoke, or drink large amounts of coffee, nutrients are depleted. Third, there is evidence that we don't, in fact, absorb all the vitamins and minerals from the food we eat. Fourth, when produce is picked before it is ripe, it lacks some nutrients. Fifth, storing food for a long time causes some loss of nutrients. Sixth, people with stress need more nutrients. Seventh, if on medication, medications typically deplete the body's store of vitamins. Age, genetics, health status, and environmental factors affect vitamin and mineral absorption. Lendon Smith discusses why one needs additional vitamins, indicating that the amount we need may vary depending on age, genetics, stress, and absorption. (Smith, Lendon, p. 69.)

An advocate of adding daily supplements for optimal brain function is neurosurgeon Dr. Vernon Mark. Although he strongly supports RDAs, he notes that they furnish only the MINIMUM requirement of all essential vitamins. Further, that this minimum is

nowhere near what he considers an optimal amount. He states "Many people make a great fuss about getting RDAs until I tell them that it's like looking at your school report card with all D's on it and saying, 'Look how well I did; I didn't flunk a single course." (p.128.) He also believes that "supplements in bottles are just as good for the body as vitamins, minerals, and other nutrients found in food." (p.144.) Three chapters in his book (9, 10, 11) offer a complete program for building and rebuilding brain power energy. Chapter 9 focuses on the relation between good nutrition and optimal brain function. Chapter 10 presents the brain power diet, based on getting the right daily amounts of the following:

electrolytes: calcium, magnesium, sodium, potassium, and chloride.
vitamins: B1, B3, B6, B9, B12, and C.
minerals: iron, copper, and zinc;
metabolite choline; and essential amino acids: such as tyrosine and tryptophan.

Chapter 11 provides meal menus for maximum brain power. (Mark, Vernon, M.D., F.A.C.S. with Jeffrey Mark, M.Sc. Brain Power: A Neurosurgeon's Complete Program to Maintain and Enhance Brain Fitness Throughout Your Life. Houghton Mifflin, 1989.)

In addition to getting the right amount of vitamins and minerals, some research suggests that there are some vitamins (such as A, D, K) which must not be taken in massive doses. These dissolve only in fats and are stored in body fat, principally in the liver, and if they accumulate in your system, they can become toxic. In addition, megadoses of vitamins and minerals can alter the balance of body functioning; overdoses of one vitamin or mineral affects others.

Substantial research is taking place as to how much supplementation is necessary to maintain one's health. For example, the safe and adequate amount of vitamin E (a vitamin to help prevent cell damage) without becoming toxic is being researched. Lawrence J. Machlin in the American Journal of Nutrition reports on six studies involving daily doses of 600 to 3,200 I.U.s of E without significant side effects. The Recommended Daily Allowance (RDA) is approximately 15 I.U.s. (American Fitness, July/August, 1989, p.11.)

As stated earlier, your body needs over 40 specific nutrients found in a variety of foods. Vitamins (as a supplementation) cannot be assimilated without ingesting food--they have no calories or cannot supply energy needed for life. It is unclear as to the optimal level necessary in each individual to promote health, due to genetic uniqueness as well as lifestyle practices, and health status.

If you plan to take supplements you should check first with your doctor. In addition, you should also do a lot of reading on the subject to educate yourself.

A book that offers good information on supplements is Dr. Andrew Weil's Natural Health, Natural Medicine: A Comprehensive Manual for Wellness and Self-Care (Houghton Mifflin Co., 1990). The author, who does not advocate taking large amounts of supplements, describes and categorizes supplements, offers general advice on taking vitamins, and tells what antioxidants to take and the amount of supplementation needed for prevention purposes.

Another book which gives a lot of information is Earl Mindell's Vitamin Bible. (See abstract in the Appendix).

A good reference book to examine is The Complete Guide to Vitamins, Minerals, and Supplements (Griffith, H. Winter, Fisher

Books, 1988). The book presents charts on over 75 vitamins, minerals, and other supplements, plus over 200 herbs. Information includes uses, sources, deficiency symptoms, RDA recommendations, precautions, overdose signs, and side effects.

A magazine offering guidelines and practical information on natural living (on such topics as personal care, vitamin & mineral supplementation, herbal remedies, homeopathy, organic foods, a shopper's guide) is available free at natural food and health stores, and also through subscription. (Delicious, New Hope Communications, Inc., 1301 Spruce St., Boulder, CO 80302.)

DO'S AND DON'TS FOR HEALTHY EATING

We often hear that there is a "nutrition revolution" going on, but most surveys cast doubt on this claim. Numerous nationwide surveys show that Americans are **not** practicing good nutrition.

Studies of eating habits and health in our country confirm that there are gross deficiencies in the average American diet--Americans consume too much fat, sugar, and salt and eat too much processed, junk foods. To have a lean, healthy body, proper nutrition is essential--to achieve and maintain low body fat, you need to eat foods which are low in fat; to maintain your health you should eat a variety of foods which are nutritional (vegetables, grains, fruits, etc.) rather than foods with "empty calories"(candies, cakes, chips, etc.).

How astounding to watch TV ads promoting medications and drugs (antacids, laxatives, others) to treat common ailments that could probably be avoided by choosing to eat nutritious food. For example, if you eat food with adequate fiber, you should not be constipated, need laxatives, or as a rule, develop hemorrhoids; eat a variety of healthy foods low in fat, and you shouldn't need antacids...and the list could go on.

I recommend a list of "Do's and Don't for Healthy Eating" as guidelines to help establish and maintain good eating habits. These simple tips consist of personal opinions for eating better and are addressed to people who are beginning to get into a fitness program, knowing full well that they will learn more as they get involved in fitness.

EATING HABITS:

"DO'S"

1. **Eat a balanced diet which incorporates basics from the four food groups in a daily menu.** Include low-fat foods from the dairy, meat, grain, and vegetable groups since no single group provides all the essential nutrients you need. Include a nutritious breakfast, which by the way, most over-weight, undernourished people seem to skip.

It is important to eat a good, balanced diet when you are going through a stressful period. Sometimes you can anticipate a forthcoming stressful event, for example, at work when a report or project is due or when a life problem arises, such as you or a family member facing surgery. At times like these, eating well the week before (and during stressful events themselves, when possible) will help you cope much better and help you feel less anxious.

2. **Realize that there are innumerable recipes for great tasting low-fat, low-cholesterol, low sugar, and high fiber foods that can and will readily replace your "old" food choices.** You certainly never need to go hungry to eat healthy. There are many healthier substitutes you can make in your old favorite recipes.

3. **Modify recipes by substituting low-fat and low-calorie ingredients.** Most recipes call for too much sugar and fat that can be cut at least in half, for example, with little or no noticeable effect on taste. Three books--by Bailey, Brody, and Pritikin--include sections describing how to modify recipes and contain excellent recipes that are low in fat and sugar.

Here are a few well-known substitutions to make foods healthier:

o Eggs--use two egg whites for one egg yolk (substitutes contain additives).

o Flour--combine half whole wheat flour with white flour to make cake or cookies more nutritious.

o Milk--use non-fat for whole; to add more richness, use low-fat buttermilk in muffins, pancakes, cakes, puddings, salad dressings.

o Cream--use canned evaporated skim milk.

o Sour cream--use non- or low-fat yogurt.

o White Sauce--pureed non-fat cottage cheese flavored with onion and garlic powder.

o Cottage cheese--use non-fat or low-fat in place of creamed.

o Baking chocolate--use 3 tablespoons cocoa plus 1 tablespoon oil for 1 ounce chocolate.

o Sugar--decrease amount of sugar by one/third, or use the same amount of concentrated apple juice, or use molasses.

o Fat--cut in half and add equal amount of liquid--juice, buttermilk, or applesauce. Ratio of fat to flour: muffins = 1 to 2 tablespoons per cup of flour; cake = 2 tablespoons per cup of flour.

o Mayonnaise--1 part mayo to 4 parts yogurt.

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4. **Rotate specific foods.** Include an assortment of different vegetables and fruits daily; rotate grains (wheat cereal one day, and corn and oats on following days). Eating the same foods everyday not only leads to boredom, but also can result in an inadequate diet. Some people have allergies to certain foods without being aware of it. Rotation of foods helps alleviate some food sensitivities.

5. **Eat foods high in fiber (food remains that are left over after normal digestion.)** Fiber protects the digestive track. Make sure to drink 8 or more glasses of water a day so that fiber can do its work in eliminating wastes. Get both types of fiber--soluble and insoluble both of which appear in varying proportions in fiber foods (see pp. 123-124).

6. **Eat whole grains, rather than refined products, because they contain more nutrients and fiber.** For example, buy old fashioned oats rather than instant oats, which contain added salt and has less fiber--also some instant oatmeals have added sugar and fat; brown rice rather than white rice. Buy a variety of different grains, learn how to mix them together. Cook with whole wheat flour. The most healthy breads (those breads with the most nutrients) include whole wheat, cracked wheat, wheatberry, and bran; rye, pumpernickel, oatmeal are very healthy. Healthwise, Italian, French, sourdough, and enriched white are less healthy. Remember to check labels to see how much oil is contained in the bread. Some breads have no oil at all and are excellent tasting.

7. **Eat whole natural foods rather than processed foods.** The less that is done to the food you buy, the better off you are nutritionally. Some new nonfat, commercially prepared foods are appearing on the market. Many of these contain fat substitutes and a long list of artificial ingredients. You'll have to make your own decision whether to include

them in your diet. Personally, I prefer to avoid foods with dyes, preservatives, and artificial sweeteners when possible. Good advice that I have heard other people say includes: don't eat man-made, processed foods/products; instead, eat foods in the form that God made them--and do not eat processed foods advertised on TV. Processed foods typically have more calories and fewer nutrients. For example, raw nuts (compared to roasted) have more vitamin B6, whole grains also contain more B vitamins.

There is another bonus to eating naturally. We can improve the environment. Most of us are concerned about the environment and the large amount of non-bio-degradable garbage and trash generated. Prepared foods produce a lot of trash in the way of cans, jars, foil, and other containers. There is very little weekly trash when one consumes fresh, natural foods.

8. **Eat quality foods.** Think about putting into your body only those foods which are wholesome. For example, drink diluted juices (less sugar and calories), mineral water, and water (avoid colas and sodas); eat whole grain breads (avoid white enriched bread); eat fresh fruit (avoid canned fruit in heavy syrups). If you like to eat baked goods occasionally, try to buy or make them with wholesome ingredients, such as whole wheat flour, oats, raisins, nuts using a minimum amount of sweeteners and fats. Health Valley products (cookies, muffins, crackers) are made with wholesome ingredients. (Avoid packaged cookies loaded with sugar, refined flour, fats, and preservatives).

9. **When you snack, select nutritious foods--fresh fruit, whole-wheat bagels, raw vegetables, dried fruits, or unbuttered, hot-air popped, no-salt popcorn.** Dried fruits are healthy, but are high in calories and may contain sulfites. Therefore, if trying to lose weight, you won't want to eat dried fruits.

10. **Add to your menus fresh, cruciferous vegetables, which are attributed to have anti-cancer properties.** These include broccoli, cabbage, cauliflower, kale, kohlrabi, and collard/mustard/turnip greens. Prevention reports that best nutritional bets against cancer include nutrient dense foods with vitamins **A** (specifically, beta-carotene), **C, E**; and minerals **selenium** and **calcium.** (Prevention, Oct., 1988, p.73.) (For a list of foods high in A,C,E and selenium, see p. 122.) Note that these nutrients are the same ones that work to combat aging. (See calcium sources below.)

Eat five fruits and vegetables a day--one rich in vitamin A (carrots...), one in vitamin C, one high fiber (corn, figs, apples...), and one cruciferous. (American Health, April, 1989, pp.140-141, reporting on the California Health Dept. "Nutrition and Cancer Prevention Program.")

11. **Include foods high in calcium throughout your life to help prevent osteoporosis.** Get at least 1,000 mg of calcium per day from non- or low-fat dairy products (skim milk has approx. 300 mg. of calcium per 8 ounce glass) or greens such as broccoli, collard, & kale; tofu; and fish, such as salmon and sardines. The National Institutes of Health daily Recommended Dietary Allowance (RDA) for milligrams of calcium are **1,200** for adolescents and teenagers, **1,000** for adults, and **1,500** for post-menopausal women (not on estrogen) and the elderly.

Add non-fat powdered milk to just about any food to boost calcium intake. Carnation Dairy offers a pamphlet on how to add powdered milk to foods and how to substitute it for other foods used in recipes. For example, in baking you can substitute an amount of powdered milk for sugar, thereby cutting down on sugar and fortifying your dessert with calcium. This works very well in cookies, quick breads, and cakes. I add non-fat

powdered milk (2 tablespoons or more) to nonfat milk, along with fruit (banana, fresh pineapple, berries, etc) and blend for a high power shake. Substitute powdered milk for cream in coffee.

An excellent book which addresses the issue of calcium and health in detail is Calcium and Common Sense by Robert P. Heaney, M.D., Doubleday, 1988.)

12. **Eat whole fruits rather than drink fruit juice, which typically are high in sugar content, lack fiber, and don't provide the chewing or fullness satisfaction of fruit.** When you do drink juice, dilute with 1/2 regular or mineral water, giving less sugar and calories.

13. **Reduce the amount of sodium in your diet.** Consuming too much sodium contributes to hypertension and other problems which can lead to heart disease and strokes. It also causes the body to retain water. Your physiological need for salt is approximately 500 milligrams (about 1/4th of a teaspoon of salt daily). Recommended Dietary Allowance (RDA) for sodium is 500 milligrams per day. Since almost all foods have salt in them, you can easily get enough salt in your diet from natural, unprocessed foods. Generally recommended levels of salt for adults range from 1,100 to 3,300 milligrams.

The American Heart Association recommends consuming a maximum of one gram (1,000 milligrams) of sodium per 1,000 calories --not to exceed three grams per day. Most people should consume only 1/2 to one teaspoon (1 to 3 grams) of salt per day. It is said that most Americans daily consume from 2 to 4 teaspoons of salt.

Many commercial canned and processed foods contain large amounts of sodium. Read the labels carefully to see how low in sodium the product is and take note of the serving size. Terminology used in labels on salt content or processed foods--usually reported in milligrams-- are included in the chart below. When canned foods contain a lot of salt, rinse them off before heating.

Here are a few terms used in describing amounts of sodium.

Term	Milligrams Per Serving	Comments
Low Sodium	140 or less	Check serving size. May be quite a lot.
Very Low Sodium	35 or less	Good.
Sodium-free	5 or less	Excellent.
No Salt		Product made without adding salt, but may contain salt in natural product.
Reduced Sodium		Product contains 75% less sodium than similar ones; could still be high.

In addition to checking labels, you can avoid eating too much sodium by leaving the salt shaker off the table. Modify your recipes so that eventually you don't add salt to recipes and you flavor foods with lemon and lime juice, herbs and spices. Fresh vegetables and meats prepared without salt are lower in sodium than canned or prepared. Some companies, such as Health Valley, prepare foods with little salt.

Some of the many highly salted foods include potato chips, pretzels, and nuts; many cereals, cheese, condiments (such as ketchup, soy sauce, mustard), preserved foods (bacon and dried beef), pickled foods (sauerkraut, olives, anchovies), canned products (canned fish, vegetables, vegetables and meats, soups, shellfish, fruits), canned sodas preserved with sodium benzoate, ready-to-eat cereals, pastas, and rice, frozen dinners, and packaged mixes.

14. **Take into consideration your total daily**

eating plan. For example, if you know that you will be attending a party in the evening that will serve as a "meal" (but is really snacks), make sure that you eat a healthy breakfast and lunch. Occasionally, my exercise class plans an evening activity after class. We get together for snacks (some healthy, some not). On these days, I eat a good breakfast that includes grains, fruit, and whole grain toast. For lunch, I eat a fresh, green salad along with vegetables. My daily plan always includes a green salad. Whenever I think there is a possibility of not including it in the evening meal, I'll have a salad for lunch.

15. **Eat foods high in iron (red meat, nuts, molasses, asparagus, beans, oatmeal).** Vigorous exercise and sweating can deplete the body of its iron. **Iron RDAs for men are 10 mg; for women under age 50, 15 mg and over age 50, 10 mg.**

To make sure you get enough iron, cook in cast-iron cookware. To increase iron absorption, substitute blackstrap molasses (high in iron) in place of other sugars and sweeteners; avoid drinking tea or coffee with meals (both reduce iron absorption); and eat vegetables that are high in vitamin C when consuming foods high in iron (vitamin C helps the body better absorb iron).

CONTROLLING FAT INTAKE "DO'S"

16. **Use oil, butter, and margarine sparingly (100% of total calories are fat).** If you choose to use a spread, check the label to make sure that it is not hydrogenated or that it does not contain coconut or palm oil. For cooking, research indicates at this time, that it is best to use monosaturated oils which seem to have a lowering effect on blood cholesterol levels. It is best to cook with extra virgin or virgin olive oil, both of which are not chemically processed. When you can, cook with non-stick pans that require no oil or saute in broth, apple juice, wine, or water, for example.

When you must use mayonnaise, use the light variety with five or less grams of fat per tablespoon; use only half the recipe portion called for; and substitute lowfat or nonfat yogurt for the other half. (Regular mayonnaise contains 11-12 grams of fat per tablespoon). Personally, I substitute nonfat yogurt for mayonnaise in my salads and spreads. Among the books that include low-fat, low cholesterol recipes are those by Hellerstein, Brody, Connor, Gleser, and Pritikin.

For more information, in Beyond Pritikin, (p.90) Ann Gittleman provides detailed discussion and guidelines on the kinds of fat that are safe to consume and cook with, and also fats to avoid. She advises that our bodies need two kinds of essential fats--unrefined vegetable oils (safflower, sunflower, corn oil...) and omega 3s (salmon, herring, tuna...).

Emphasizing that vegetable oils (polyunsaturates) should be used on salads (**not** for cooking!) she stresses that they should be expeller pressed crude or unrefined oils and not prepared with chemicals or heat. "Spectrum Naturals" is a good brand that prepares oil the recommended way. For cooking, Gittleman advises using monounsaturates --peanut, canola, extra virgin or virgin olive oil--because these are less prone to oxidation.

In a highly informative 10-page section on fats in his book, Dr. Weil notes that "not only is the amount of fat you eat an important determinate of health, so also is the kind of fat and the way it is prepared. His general advice includes: cut down on fat, follow a vegetarian or semi-vegetarian diet, use no hydrogenated fat, minimize intake of polyunsaturated oils and when you do, use them in small amounts and only in cold foods because heating makes them susceptible to oxidation which produces

free radicals. In regard to the best oil to use, he suggests virgin or extra virgin olive oil or canola oil, for both cooking or cold use. Purchase in small amounts, use quickly, store in the refrigerator, and toss when it smells rancid. He tells which oils to avoid using, and which to use moderately cold or hot and in small amounts. The discussion is thorough, giving reasons for avoidance and use.

Use Cold or Hot-- Monounsaturates:
Olive and Canola are best to use.

Use Cold Only (minimal amounts)-- Polyunsaturated:
Sunflower, Corn, Sesame, Sesame Roasted (dark), Nut Oils, Soy.

Don't Use--
Safflower, Cottonseed, Vegetable Shortening, Chickenfat, or Margarine (it's better to use a minimal amount of Butterfat, instead).

Derived from Natural Health, Natural Medicine, Weil, Andrew, M.D., Houghton Mifflin Co., 1990, pp.16-25).

17. **Recognize that some wholesome and healthy foods are not necessarily low in fat.** For example, over 40% of calories in tofu come from fat and although it is unsaturated, if you are trying to eat within the 30% guidelines set by the American Heart Association, you need to be aware of fat content of all foods. Peanut butter (and other nut butters) have approximately 75% of total calories from fat, avocados over 85%.

18. **Know how to figure fat calories in servings of food.**

The formula: Calculate the **percentage of calories from fat** by multiplying grams of fat by 9, then divide by total calories. (1 gram of fat = 9 calories.)

Take # of grams of fat per serving and multiply by 9.
Example: 5 grams of fat x 9 = 45.

Divide grams of fat by total calories per serving.
Example: 45 divided by 145 (total calories) = 31% fat calories per serving.

19. **Know how to figure the maximum grams of fat you should eat in a day, i.e., translating 30 percent fat (or less) into grams of fat.**

Take the number of calories you consume daily.
Example: 1500 calories per day.

Of these total calories multiply by 30% or less.
Example: 450 of your cal. (or less) can come from fat.

Divide by 9 (each gram of fat has 9 calories).
Example: 55 grams of fat per day should be the maximum.

The following chart shows how many total grams of fat daily are allowable following AHA guidelines, **according to the number of calories eaten per day.** Amounts of fat lower than listed are even better!

AHA Guidelines on Daily Maximum Fat Intake in Relation to Total Calories.

Formula:
Daily Caloric Intake X .30 div. by 9 = Total Daily Grams Fat

Daily Caloric Intake	Total Calories from Fat	Total Daily Grams of Fat or less
1,200	360	40
1,300	390	43
1,400	420	46
1,500	450	50
1,600	480	53
1,700	510	56
1,800	540	60
1,900	570	63
2,000	600	67
2,100	630	70
2,200	660	73
2,300	690	76
2,400	720	80
2,500	750	83
2,600	780	86
2,700	810	90
2,800	840	93
2,900	870	96
3,000	900	100

20. **Choose lowest fat contents in products;** i.e., skim milk (no fat calories and no grams, or 1 gram, of fat) over whole milk (48% fat calories and 8 grams of total fat) or 1% (21% fat calories and 2.4 grams of total fat) or 2%

(33% fat calories and almost 5 grams of fat). Make sure the milk has been fortified with vitamins A & D. Choose non-fat or low-fat yogurt; lean turkey breast over those basted with or prepared with butter. Breads and grains are usually low fat items, however, there are hidden fats in some of these products so always read labels for fat content.

Following is a summary of high- and low-fat kinds of bread, crackers, and cereals, and cheese.

Table 11: HIGH/LOW FAT BREADS, CEREALS, CRACKERS, & CHEESE

	HIGH FAT	LOW FAT	
Breads--	croissants	bagels	pita bread
	biscuits	French	corn bread
	bakery muffins	Italian	whole grains
	breads served with butter (garlic bread).	English muffins	
		(Remember to read labels on breads for the amount of oil.)	
Crackers--	those containing hydrogenated	soda and oyster crackers (however, watch for salt content.)	
	soybean oil	rice cakes	
	cottonseed oil	rye crackers	
	palm kernel oil	whole wheat matzo crackers	
	coconut oil	flatbread	
	lard	Melba toast	
Cereals--	granola with added oil	Check labels. Some cereals have considerable amounts of coconut and palm oils, which are saturated fats. A variety of whole grain cereals now available are good tasting without fat or with very little fat, such as shredded wheat, and cereals by Arrowhead Mills and Health Valley, and hot cereals such as oatmeal. Cereals should contain 5 grams of fiber or more per ounce serving.	
	nuts, seeds		
	coconut flakes		
	many commercial cereals low in nutrients and fiber and high in fat and sugar.		

Cheese--

Cheese is a good source of calcium and protein, but most cheese is high in sodium and fat. Use natural, low-fat (with 5 or less grams of fat per ounce), low-sodium cheese. Sixty-five to 75% of the calories in most cheese comes from fat; in low-fat cheese approximately 40-50% of the calories comes from fat. Sodium in regular cheese ranges from over 450 mg per ounce (parmesan) to 70 mg per ounce (swiss) or lower. Low salt varieties usually contain 100 mg or less salt per ounce. The American Heart Association suggests substituting cheeses of five grams or less for meat in a meal. If possible choose sharp-flavored cheese for dishes because you can use less.

Very High Fat--	High Fat	Low Fat	Very Low Fat
9-11 grams of fat per oz. (cheeses made with whole milk, with butterfat added. They include: gjetost, gruyere, cheddar, colby, roquefort, cream cheese, many soft cheeses with seasonings (i.e., camembert, creamed cottage cheeses...)	6-8 grams of fat per oz. (cheeses made from whole milk, & are high in saturated fats, and cholesterol) Brie, blue, brick, edam, muenster, provolone, farmers, romano, feta, fontina, gouda, jarlsberg, limburger, monterey jack, neufchatel, parmesan, swiss, and pasteurized cheese spread and processed cheese.	3-5 grams of fat per oz. They include: lite ricotta, sapsago, and part-skim mozzarella. (See brand names below.)	2 or less grams of fat per oz. (cheeses made primarily from skim milk) They include: pot cheese, skim riccotta, uncreamed lowfat & nonfat cottage cheese, skim farmer cheeses, grated Parmesan, and many diet cheeses. (See brand names below.)
			Trace Fat: hoop, gammelost.

Brand Names of Low-Fat Cheeses:
Kraft makes a sharp-flavored cheddar and Jack "Light Naturals" with 5 grams of fat per ounce. (Still 50% of calories; use sparingly.)
A Wisconsin-based cheese manufacturer makes a cheddar, colby, and farmers cheese (under the brand name of White Clover Dairy) and a gouda cheese (brand name Holland Farm) that contain up to 44% less fat.
Lifetime Food Company makes a "Lifetime Natural Part Skim Milk" cheddar cheese with 3 grams of fat.
Calabro makes a nonfat ricotta cheese.

21. **Choose lean, small (3 ounce) portions of meat, fish, poultry, or eat grains, dry beans, and peas as your protein.** Leanest meats include fish, turkey, and chicken. Avoid eating large quantities of red meat which is marbled with fat. In regard to choosing the leanest beef, the grade "select" has the least fat, followed by choice, while prime contains the most fat. Leanest cuts of beef include round steak, sirloin, tenderloin, flank, and rump; highest in fat are prime rib, sparerib, and rib steaks. Serve low-fat meats as a side dish or to flavor sauces, rather than a main item.

22. **Use less meat in your meals.** For protein, substitute beans and/or grains.

PREPARATION AND COOKING FOOD: "DO'S"

23. **Trim fat from meat, remove skin from chicken, and bake or broil meat or fish, rather than fry.** Marinate tougher, lean cuts of beef in juices (lime, lemon, pineapple, or tomato, or wine, for example) to tenderize and give them flavor. Rub raw meat with herbs and spices before cooking for flavor.

24. **Steam or microwave vegetables and under cook, rather than over cook them, to enhance flavors and preserve vitamins.** Learn to eat these without margarine or butter.

SHOPPING:"DO'S"

25. **Shop at a market catering to those concerned with maintaining a healthier lifestyle--one which promotes** fresh/wholesome foods rather than processed foods. Some, for example, carry foods that are free from harmful preservatives and also carry organic foods.

A good book for those concerned about additives, carcinogenic agents, and other dangers and poisons in the food we consume and water we drink is Earl Mindell's Unsafe at Any Meal. (Warner Books, 1987).

Organically grown foods are raised without synthetically compounded pesticides, herbicides, fungicides, or fertilizers. Organic, natural compounds and minerals (such as bone meal, kelp, wood ash) replenish the soil. Crops are free from irradiation, preservatives, hormones, and synthetic chemicals. "Certified Organic" foods are raised in soil free of synthetic chemicals for 1 to 3 years. Both organic methods and soil testing are performed before a product is "Certified Organic."

Often, shopping at these stores is less expensive in the long run (you don't buy junk and therefore save money) and can be more fun. Also, when you buy food in the bulk (such as oats) it is less expensive since you are not paying for advertising and packaging costs. When shopping at typical supermarkets, shop around the perimeter of a store, where natural foods are often found and avoid the center area of the store. Many supermarkets now have a health section where natural foods can be purchased. Name brands of some high quality, good tasting, natural foods I have purchased include: Arrowhead Mills, Hains, Spectrum, Westbrae, Little Bear Organics, Health Valley, and Walnut Acres.

Look for products with the HealthMark (HM) identification. Many markets now place shelf tags on products through their store to identify items that meet HM specifications--meaning that these products are low in fat, cholesterol, sugar, and salt and high in fiber.

AHA, in 1990, planned to identify a variety of foods with a logo for products that would meet the AHA guidelines for total fat, saturated fat, cholesterol, and sodium. The logo was to be a heart and check seal with the

words "American Heart Association Tested and Approved." Apparently under pressure from the U.S. Food and Drug Administration, AHA had to drop the proposed labeling program. Although it demands more effort on your part, you can check labels yourself...applying AHA guidelines.

26. **Read labels carefully to determine ingredients such as preservatives, sugar, sodium, cholesterol, and fat.** Two products that you thought were exactly alike will often have different ingredients--one may have high fat, sugar, sodium content while the other is lower in fat and salt, sweetened by fruit juice, and does not contain preservatives. (A good example of how brands can vary can be illustrated by one of my trips to the store to buy bread crumbs. Bread crumbs are available with no additives or fat; however, many brands include many kinds of fats and preservatives--not a very healthy coating for fish or fowl.) Serving sizes listed on labels - vary. Note whether the serving is reasonable, especially for the amount of fat it contains. Many companies list nutrients and calories for a 4 ounce serving, when the container has 8 ounces.

For foods that are advertised on television, check the labels for nutritional value as well as for fat and sodium. A transcript published by ABC News, December 29, 1988, entitled "Burning Questions: America's Children--Diet of Danger" (p.8) notes that the Journal of Nutrition Education reports that 80 percent of food commercials targeted for children are for products of low nutritional value.

Other ways that labels can be misleading are included in the following chart:

Table 12: MEANING OF LABELS

LABEL SAYS:	WHICH MEANS:
Low Fat	Fat content reduced to one-half of regular product.
Low Cholesterol	Less than 20 milligrams of cholesterol in each serving.
Cholesterol Free	Products that have less than 2 milligrams of cholesterol. Has no animal fat, but can contain saturated fats such as coconut and palm kernel oil; can also contain vegetable fats. Fat is fat. (Remember: cutting back on total fat intake is an important part of a healthy diet.)
Lean	For processed meats, lean means 10% or less; for fresh meat there is no standard (var. by state).
Extra Lean	Less than 5% fat.
Light	Can refer to either taste or color.
Diet, Dietic, Low	Reduced calorie--40 calories per serving or 1/3 fewer calories than the regular product.
Natural	Food produced and processed without using manmade chemicals.
Sugar free or Sugarless	No table sugar (sucrose) added, but can be sweetened with honey, corn syrup, etc.
Made without Sugar or No sugar added	Not sweetened with sugar; ingredients may naturally contain sugar.
High fiber	No government standard for how high fiber should be.
Wheat flour	Could contain a lot of white flour and just a little whole wheat. Whole wheat flour should be the first and preferably the only flour listed.

27. **Buy fresh fruits and vegetables and eat or cook them soon.** (Foods quickly lose their vitamin content, within a day or two).

EATING OUT: "DO'S"

28. **When you eat out, plan ahead what you will eat, so the menu won't tempt you to eat fatty foods.** Ask the waiter how the entree is prepared and if it is fried, ask if you can have it baked or broiled instead. Order ala carte if you can't find a healthful entree on the menu. If you order a meat entree normally covered with sauce, ask that the sauce be left off or brought in a separate dish. Order your salad with dressing "on the side", preferably low calorie, and use very little. (Otherwise, it will come "loaded" with dressing.) You can also dilute thick salad dressing with milk, juice, or water. When the dressing is thinner it spreads over the lettuce more evenly and you can use less. Order your vegetables without butter.

29. **On business trips you need to be creative in order to eat well.** You may need to plan ahead. If possible, after you arrive, plan a trip to the grocery store to stock up on some fruit, muffins that can be eaten for breakfast when a good restaurant cannot be found. When on a trip, I always check the yellow pages under health food. I often locate a store that has a deli where I can order modest portions of healthy food at low cost and also get a few items to have on hand at the hotel. When you know that it will be difficult to find restaurants that serve hardy vegetables, (especially cruciferous--broccoli, cauliflower, cabbage, brussels-sprouts--and other vegetables rich in beta carotene--carrots, squash, etc.--Mindell tells us that we can get these in vegetable tablet form. He advises that these can be taken daily. He notes that these are dehydrated without cooking to provide you with optimal nutritional value. (Mindell, p.79). One brand name is "Vital Vegies" and there are probably more.

FOODS TO CUT BACK ON

30. **Cut back on foods containing large amounts of fat and cholesterol,** which have been linked with coronary heart disease, cancer, high blood pressure, hardening of the arteries, gall bladder disease, and diabetes. Jane Brody has a whole chapter entitled "How to eat well the low-fat way."-- an excellent chapter and well-worth reading (p.75-93).

Ways to limit your intake of fat and cholesterol include the following:

31. **Cut back on egg yolks.** (instead moderate your use of eggs to include just the whites). One egg yolk has 300 mg of cholesterol (the AHA daily **maximum** amount).

32. **Cut back on empty calorie foods--foods high in fats, oils, alcohol, and sugar and low in essential nutrients.** You want to eat foods high in nutrient density. You get a lot of calories and fats (too many) from a small amount of food when you consume desserts, candies, cakes, sauces and gravies, oils, salad dressings, mayonnaise, whip cream, sour cream, butter and margarine, etc., and low in nutrient density. When you must eat these, try the lower calorie and lower fat versions and eat smaller portions.

33. **Cut back on snacking on high calorie foods.** Choose fresh fruits and vegetables.

34. **Cut back on whole milk, high-fat cheeses, and ice cream.** Instead, purchase skim milk, low-fat cottage cheese, reduced fat cheeses, and non- or low-fat yogurt. There are a number of companies that make a natural, lower-fat ice cream for an occasional treat.

PREPARING AND COOKING FOODS: "CUTTING BACK" AND "DON'T'S"

35. **Cut back on large amounts of unnecessary fat.** Make soups, stews, or the like, ahead of time, and let them cool in the refrigerator so you can easily skim off the hardened fat. If you use canned broths for the base in a recipe, keep them in the refrigerator and remove the fat before using. If you are not able to keep them in the refrigerator, put them in the freezer for about an hour and skim off the fat. Pour the oil off of peanut butter.

36. **Cut back on fatty sauces; learn to make creamy sauces without the fat or else don't eat them.** Good food prepared naturally, without "cover ups," tastes great.

37. **Don't fry meat; bake or broil it instead.**

38. **Don't overprepare food.** Overcooked vegetables lose much of their vitamin content, in addition to losing some of their flavor.

EATING OUT: "DON'TS"

39. **Don't patronize fast food establishments,** if you want to maintain a balanced diet. Consider the daily servings you need from the four basic food groups (discussed on p. 118), and you will see that it is difficult to get servings of fruits and vegetables and grains and cereals at fast food establishments. In addition, the foods are usually fried, many deep fried in saturated fat, so preparation of food is unhealthy, leading to heart disease and obesity. Some fast food chains fry food using vegetable oil (polyunsaturates). This is harmful to your health because the oils are damaged at high temperatures and reuse of the oil is considered carcinogenic (cancer-causing). Fast foods lack not only variety, but are **high** in calories, fats, sugars, and salt and low in fiber (wholegrains) and vitamins (fruits and vegetables)--just the opposite of what you need. For example, a fast food chicken sandwich can contain as much fat as a pint and a half of ice cream (reported by a Committee of the Massachusetts Medical Society, Daily Camera, Sept. 14, 1989, p.2B).

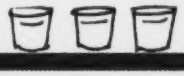
I realize that recently some fast food chains added some healthier fare on their menus. Some of these items include salads (watch the calories in the dressing), a few sandwiches lower in fat than the typical hamburger, and low- or non-fat frozen yogurt. Sandwiches usually still have too much fat and are low in nutritional value. Too, you may be tempted to buy fries, soft drinks, and other high caloric, low nutritional items. If you could find a fast food establishment that prepared a lean turkey sandwich on whole wheat bread with lettuce and tomato, fresh fruit, and skim milk to drink, I'd say "go for it." Unfortunately, this fare is absent from most menus. You are better off to find your fast foods elsewhere, or prepare your meals at home.

Actually, a number of healthy "fast foods" are available to us at our supermarket in the form of fresh fruits and vegetables. And more supermarkets have salad bars serving fruits and vegetables, whole wheat rolls, and other health foods. Remember, an apple or other piece of fruit is an excellent fast food item.

DRINKING ALCOHOL: "DON'TS"

40. **Don't abuse (overuse) alcohol.** Chronic abuse leads to addiction, and it's fattening. The 1990 Department of Agriculture's Dietary Guidelines for Americans classifies moderate drinking as no more than one drink a day for women, and two drinks a day for men. 12 ounces of regular beer, 5 ounces of wine, and 1 and 1/2 ounces of distilled spirits is classified as a drink.

DRINK WATER



Our body is comprised of two-thirds or more water. It is important to drink water throughout each day and to replace water you lose when exercising. Cells depend on water to carry out their essential functions such as carrying nutrients and oxygen to cells and removing waste products; helping the kidneys and liver function; maintaining muscle and skin tone; aiding in digestion and absorption of food; lubricating joints in the body; and regulating the body temperature. "The heart, blood, and kidneys are a single functional unit that constantly cleanses and purifies itself, removing all the toxic wastes of metabolism and the breakdown products of harmful substances that get into our bodies one way or another. This purification system can operate efficiently only if the volume of water flowing through it is sufficient to carry away the wastes." (Weil, pp.71-72.) Drink at least 6 to 8 glasses or more of water a day.

In regard to regulation of body temperature, water lost during exercise needs to be replaced to cool the body. Drink plenty of water before, during, and after exercising to prevent dehydration, (especially in hot weather). When you lose two percent of your weight through perspiration, you've lost mainly water and could become a victim of heat exhaustion or heatstroke without replenishment.

The best way to replenish fluids is to drink COLD WATER which is absorbed quickly in the body. Sports physiologists suggest drinking up to 20 ounces of water an hour or two before exercise and drinking 3 to 6 ounces every 10 to 20 minutes during exercise. When convenient, weigh before and after exercise. For every pound lost, drink two cups of water to replenish fluids lost during exercise.

Although you frequently hear and read that commercial sports beverages containing mineral supplementation (electrolytes) and glucose improve exercise performance, most experts say that water is the most important ingredient to replace. They state that for normal individuals who exercise, athletic drinks with minerals do not improve exercise results. While many exercisers ingest sports drinks with minerals, or juice or soda, some physiologists claim that a drink with more than 10% glucose even slows down water absorption. Dr. Rippe notes that "There isn't a shred of evidence that sports drinks are more beneficial than water for workouts under 90 minutes." (Bazaar, Jan.1991, pp.67 and 130.)

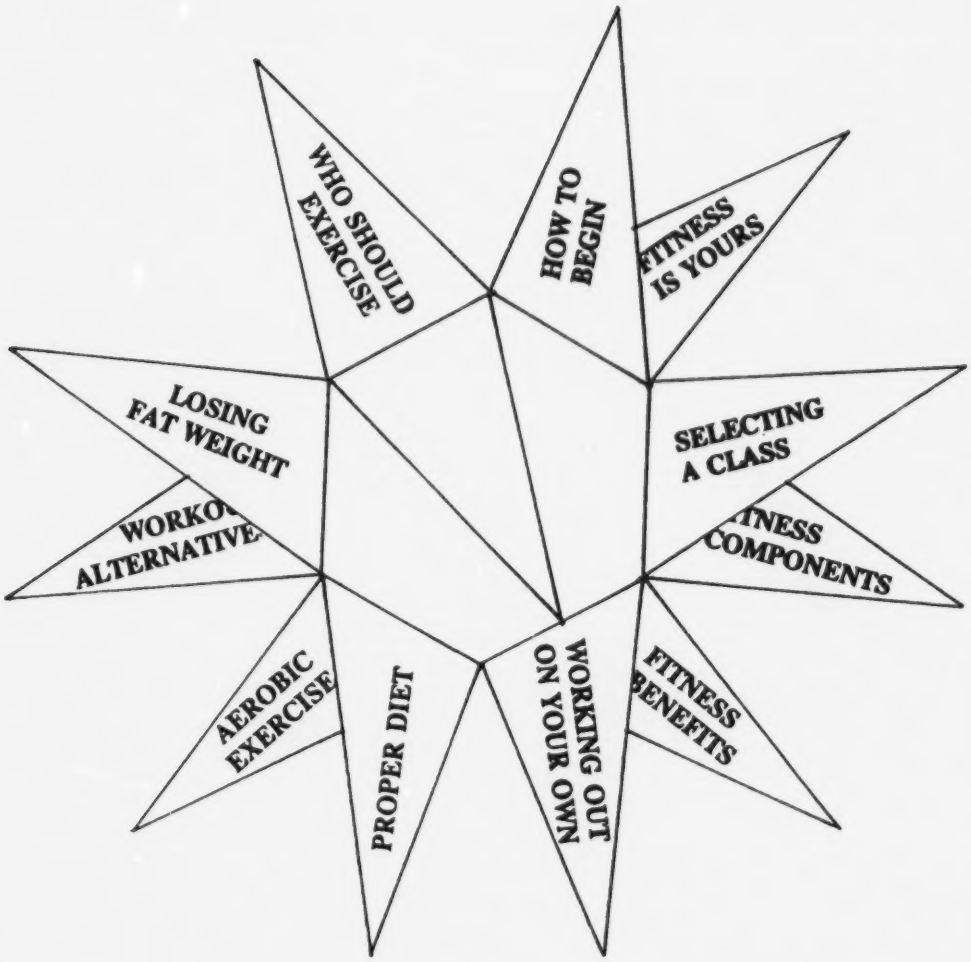
A FINAL WORD ABOUT YOUR FOOD CHOICES

The above suggestions may seem like a deprivation to many who eat the typical American fast-food, high-fat fare. However, we can select from a great variety of foods, so that it is easy to settle for healthy, quality food--and eat it in substantial **quantities**--and not feel limited or constrained in our choices! We are fortunate to live in a country in which we have an abundance of fresh vegetables and fruits all year.

In summary, you have a choice between "highly advertised, unhealthy, processed foods" or "healthy, natural foods". An easy decision to make, especially, once you get into the habit of enjoying the latter.

YOU CAN DO IT!

11. HOW DO YOU LOSE FAT WEIGHT?



11. HOW DO YOU LOSE FAT WEIGHT?

COMPLEXITY OF LOSING WEIGHT

The "national" bad news is that obesity is a major health problem in the U.S. In regard to an estimate of how much of the American population is overweight, percentages vary from a conservative 25% to a higher 50%. Being overweight reduces life expectancy.

The "individual" bad news is that persons with large amounts of fat are more susceptible to degenerative diseases. Obesity is associated with increased risk for developing cancer, diabetes, and chronic heart disease. Bray notes that "Over-weight might decrease longevity; it might aggravate the onset and clinical progression of other diseases, and it might modify the social or economic quality of life." (Bray, p. 632.)

The "good news" is that when you maintain proper weight, you will have better health, look and feel better, maintain a better self-concept, and have more energy.

Losing weight is a complex matter. Although it cannot be exhaustively covered in this short section, it is useful to touch upon the basics of weight loss. Many books have been written on the subject, with a wide range of views. This chapter presents key concepts, principles, and ideas for safe and effective weight loss.

How much and how rapidly one loses weight is not "cut and dried." Many interdependent factors effect weight loss, including physical makeup, heredity, age, hormones, metabolism, diet, activity levels, lifestyle, mental state, and how fit you are. (McArdle, p.532.)

Current research indicates the importance of genetics and its role in "fatness" and gaining weight. Genetics influence metabolism--the rate at which a person burns calories and stores fat. But while metabolic rate is affected by genetics, regular exercise can help raise this rate--which will aid in weight stability.

Exercise and reduced caloric intake work synergistically to foster weight loss. A 12-week study at San Diego State University in which 48 women participated in a variety of exercise programs showed that although exercise increased each person's strength and endurance (regardless of the exercise program they participated in) none lost weight or body fat, indicating that exercise needs to be accompanied by diet changes for weight loss. (Shape, July, 1988, p. 89 and 91.)

RESOURCES ON WEIGHT LOSS

Throughout this section I refer to several good books and articles. You may wish to obtain copies of these for more detailed information or for a step-by-step program to follow for losing weight. Some of these are worth mentioning up front.

Shape magazine includes a 30+ page special section annually, in March, which focuses on weight loss maintenance. March, 1987, 1988, and 1990 all contain relevant, up-to-date, and effective guidance information on this topic. The advice and programs are easy to put into practice. The 1987 issue contains 35 pages on fat loss with much information that includes a workbook type approach for losing weight. The 1988 issue provides a good 12-week exercise program for the overweight which is designed to build up exercise duration gradually until an effective level of aerobic training is reached. Emphasizing an individualized approach, you can select from a variety of aerobic activities offered and work out at your own fitness level. Weight maintenance is the special emphasis of the March, 1990, issue. It includes: a five-page

safe (high carbohydrate, low fat) eating plan for those who want to lose 30 lbs. in 12 weeks; an exercise guide and 6-week weight reduction plan for obese women (30% fat or over); a time efficient circuit-training program for general fitness and weight loss of 30 lbs. or less; a seven-page guide to weight maintenance over a life time; and a brief guide to help determine daily fat consumption in grams. I recommend these issues of Shape for those who want to lose weight or maintain weight loss. (Shape, March issues: 1987, p.70-106; 1988, p.79-183; 1990, p. 69-103).

The March, 1988, issue of Shape (p. 87) contains reviews of six sensible diet books:

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1. Jane Brody's Nutrition Book, Jane Brody (W. W. Norton & Co., New York, 1985).
2. The Living Heart Diet, Michael E. DeBakey, M.D., et al (Raven Press, NY, 1984).
3. Weight Watchers Food Plan Diet Cookbook, Jean Nidetch (New American Library, New York, 1982).
4. The California Diet and Exercise Program, Peter Wood, Ph.D. (Macmillan Publishing Co., New York, 1983).
5. New Canadian High Energy Diet, Sandra Cohen-rose and Colin P. Rose, M.D., Ph.D. (Corona Publishers, Montreal, Canada, 1986).
6. The Fat-to-Muscle Diet, by Victoria Zak, Cris Carlin, M.S., R.D., and Peter D. Vash, M.D., M.P.H. (G. P. Putnam's Sons, New York 1987).

Many of the books abstracted in the Appendix offer sound healthful advice on weight control. Some offer programmed approaches to weight loss. All treat weight loss in a wholistic manner, recommending that a sound nutritional diet be accompanied by exercise.

If you have a home computer you may want to examine some of the approximately 100 nutritional computer software packages on the market today designed to help people plan and stick to a balanced diet. Available through computer stores or mail order houses and ranging in price from $20 to $4,000, the programs offer a variety of options for the user. Most programs help people calculate calories and nutrients in the foods they are eating and compare them to the Recommended Daily Allowances (RDAs) for weight loss diets. Some programs, however, are designed for specific populations who need to restrict their intake of cholesterol or sodium, for example. Shape magazine describes six sample software nutritional programs and provides information on compatibility of software with various computers, price of packages, address and telephone number of suppliers. (Shape, June, 1988, p.127 and 142).

UNDERSTANDING AND CALCULATING YOUR WEIGHT LOSS

The rest of this chapter covers principles and formulas for calculating the estimated fat weight you need to lose to reach your "ideal weight." Following explanations of these principles and formulas, a worksheet is provided--just before the part titled "Some Do's and Don't's for Losing Weight"-- which lets you calculate your ideal weight and the amount of fat weight you need to lose for good health.

The principle for maintaining, losing, and gaining weight is simple enough. It involves controlling caloric intake from food (fuel) and expending calories (burning energy) through physical activity. To lose fat, use more calories than you consume. The varying ratios between caloric intake and caloric expenditure are highlighted here, and then discussed in more detail later in this chapter.

Maintain weight: The number of calories in food you eat must be equal to the number

burned through energy expenditure. If a person consumes an average of 2,000 calories per day and expends 2,000 per day, weight remains constant.

Lose weight: You eat less than you burn. If a person consumes 1,800 calories per day and expends 2,100 calories per day, weight is lost. The person expends 300 more calories per day. How this works will be explained later.

Gain weight: You eat more than you burn up. If a person takes in 2,100 calories and expends 1,800, the 300 calorie difference is stored as fat and the result is weight gain.

In essence, balance must be achieved between the number of calories taken in and number expended to stay the same weight. When more calories are consumed than burned, fat is stored in the body and weight is added.

NOTE: One pound of fat = 3,500 calories.

The person who eats 300 additional calories over the energy expended every day for one week, will total up 2,100 additional calories per week; 8,400 calories per month, resulting in a gain of 2 1/3 lbs per month and in one year put on 28 pounds. This could happen if a person ate an extra-high calorie dessert or snack daily. Weight gain like this sneaks up on people over the months and years.

In contrast, if this person sets a goal of losing the 28 lbs in a year (a little over two pounds per month) he/she would need to reduce caloric intake and burn more calories by 8,400 more calories per month (remember that each lb of fat = 3,500 calories) by eating less and exercising more. For example, the person may give up dessert; i.e. eliminate 150 to 200 calories per day and take a brisk walk for 30 minutes burning 150 calories.

Later in this chapter, I discuss how to combine diet and exercise to lose weight efficiently.

REALISTIC, HEALTHY GOALS FOR WEIGHT LOSS

Weight loss goals need to be realistic. A few examples of such goals from ACSM follow.

Goals Set By ACSM

Be sure to set **healthy** goals for losing weight. You want to internalize good nutritional habits that will last a lifetime.

Desirable guidelines for normal adults choosing weight loss programs to minimize nutritional deficiencies and losses of lean tissue that often occur on strict diets are provided by ACSM (pp.114-115). Some of these are listed below.

1. Normal adults should consume at least **1,200** calories a day. (ACSM notes that this requirement may vary for children, older adults, and others.)

2. Reduced caloric intake should be accompanied by an aerobic exercise program, following the FIT formula discussed in Chapter 4, p. 36, and a strength program, pp. 50-52.

3. Caloric deficit should not exceed 1,000 calories per day; (i.e., your reduced caloric intake through eating and your increased caloric expenditure should not exceed 1,000 calories).

4. During each workout, caloric expenditure should be 300 to 500 calories per session and 1,000 to 2,000 calories per week. For weight loss, "regimens of greater frequency and duration of training and low to moderate intensity are recommended." (ACSM position statement, p. 269.)

5. MAXIMUM weight loss should not be more than **2 lbs per week.**

Other Ideas/Goals for Weight Loss

Other professionals in the field also suggest that a good prescription for losing weight is to increase the frequency of conditioning up to 4 or 5 times per week for longer durations--30 to 55 minutes at 55% of target heart rate.

Ellen Coleman suggests an exercise prescription for weight control. The goal should be to expend at least 300 calories per session, since this seems to represent a threshold for body fat loss. If the intensity of exercise is low, you do it longer, until the 300 calories have been expended. (Coleman, p.127.)

Experts on losing weight and keeping it off offer these suggestions for losing fat and retaining lean muscle mass:

Adopt behavior modification techniques that promote and maintain lifelong healthy eating and exercise.

Lose weight slowly; reduce caloric intake by about 500 calories per day; gradually increase caloric expenditure through exercise; and lose weight at an average rate of one percent of body weight per week. (Prevention, p. 105-106, Nov.,1987).

It is advised that those who are 30 to 40% overweight and need to lose weight more rapidly need to be closely monitored by a physician and registered dietitian.

You will be better able to lose weight and keep it off when you set realistic goals and follow the above guidelines.

THE WINNING COMBINATION: DIET AND EXERCISE

Why Diets Alone Don't Work

Those who lose weight on low calorie crash diets but don't change their eating or exercise habits usually regain lost weight. Crash diets tend to be successful at first, but the weight loss is usually only temporary. If one diets for life, it is possible to keep weight off, but at the expense of becoming depressed, exhausted, and feeling deprived. When individuals go off the self-defeating diet, they return to their old eating habits, only to gain back the same amount after a few weeks.

Ronda Gates (Dance Exercise Today·, Jan/Feb. 1988, page 30) offers guidelines for evaluating diets. She cautions to avoid diets that promise unrealistic, rapid weight loss (more than 2 lbs per week); do not provide sufficient calories for needed nutrients (1,000 to 1,200 per day women and 1,500 to 1,700 men); and do not include a variety of food and depend heavily on consumption of one nutrient or food group. The diet should promote foods low in fat and high in complex carbohydrates. Gates suggests checking to see if the diet is endorsed by reputable dieticians or nutritionists from recognized institutions.

Diets should also promote behavior modification to help you incorporate good eating habits daily, along with exercise for a lifetime. The problem with liquid commercial diets is that they are an attempt at quick weight loss and do not promote long lasting nutritional habits. Weight loss programs should not use appetite suppressants, diuretics, sauna belts, and body wraps, or other gimmicks.

Emphasizing the need to follow a good nutritional program when cutting calories, the neurosurgeon Mark notes "The reasons weight loss diets often don't work is that you can't

stick to them, and the reason you can't stick to them is that you're trying to change the quantity of the food you eat without changing the quality of the nutrition your brain is getting. You can't expect your brain to respond positively to a reduced calorie intake when you insist on depriving it of the nutrients it needs to function properly. Once you learn what your body needs and how to get it, you'll be able to take a sensible approach to controlling your weight." (Mark, p.126.)

Diets that do not supply needed nutrients can be dangerous to your health, leading to carbohydrate, protein, vitamin and mineral deficiencies, anemia, gallstones, metabolic imbalances, excess vitamin supplementation, hair loss, skin breakout, diarrhea, digestive problems, dizziness and fatigue. Weight loss from very low calorie diets comes from lean body mass (muscles) not fat. Crash diets increase fat-to-muscle ratio, making you fatter and lowering your metabolism. One study showed that repeated loss/gain cycles lower the body's metabolic rate, so that it needs fewer calories to maintain the same rate. (Shape, June, 1988, p.126).

In contrast, the combining of exercise and good diet minimizes nutritional deficiencies and losses of muscle mass that result from severe restrictions of caloric intake. The next sections discuss the importance of daily exercise.

Dieting helps you lose body mass (this could include fat or lean tissue, or the weight loss could be water), but cannot help to reshape your body the way exercise can. Further, dieting alone tends to promote fat storage later, after you have gone off the diet. As stated earlier, when you diet without exercising, you tend to lose lean muscle mass. This lean muscle mass that you lose could include heart muscle loss. Recent research indicates that during severe dieting only (without exercise), muscle loss includes losing essential heart muscles that help the heart to function normally. In contrast, exercisers on moderate diets build heart muscle. (Dance Exercise Today, April, 1988, v6 #3, p.11). Initial loss of weight includes almost no loss of fat. An effective weight loss program promotes losing weight that is body fat--not lean tissue.

Dieting slows the metabolic rate; i.e., the rate at which your body burns calories. When one fasts or is starving, his metabolic rate slows down to adapt to the new situation, burning calories more slowly and therefore burning fewer calories a day. A restricted diet trains the body to be more energy efficient, to conserve calories by slowing the metabolic rate. As the metabolic rate drops, it is more and more difficult to lose weight. To lose weight and keep it off, you need a high metabolic rate, which can be raised by aerobic activity.

Why Exercise with Diet Benefits Weight Loss

In contrast to "dieting only" which slows down the body's metabolism, physical exercise builds muscle. Muscle, the body's metabolic tissue, burns more calories at rest than fat tissue. Lean muscle tissue is an active tissue that burns calories 24 hours a day. So, as muscle tissue is built up with exercise, the metabolic rate increases. Metabolic rate is proportional to the amount of lean muscle in the body. The more you exercise, the more you will replace fat with lean muscle; the more lean muscle, the higher the metabolic rate. Exercise speeds metabolism and burns fat (protecting the body from loss of lean tissue, which occurs when you cut calories without exercise). Also, since metabolism accelerates for several hours after exercising, you burn more calories at rest for some time after exercise. Exercise also helps to relieve tension and depression--causes for overeating.

Exercising at your target heart rate helps you burn fat which insulates your body. When you have less fat you burn more calories to maintain your body temperature.

For best fat loss results, supplement your aerobic exercise program with an easy to moderate weight training program using free weights or machines. Aerobic exercise burns more calories (and fat) during the workout; weight training exercise builds muscles which increases your metabolic rate for a longer duration after exercise.

LOWERING TOTAL FAT INTAKE WILL HELP YOU LOSE WEIGHT FASTER

More and more research shows that being overweight is related to fat intake, rather than total calories consumed. Eating too much fat is the cause of obesity and health problems according to recent studies done at the Harvard Medical School and Stanford University School of Medicine (Daily Camera, Jan. 11, p.5b).

An article from the American Society of Bariatric Physicians (ASBP), specialists in treating overweight people (Prevention, Jan.1988, p.36-41, 118-122), presents a list of three alternative (good, better, best) weight-loss ideas for 1988. The article also notes that fat is treated differently by your body than carbohydrate or protein--that almost all fat calories are directly converted to body fat. This idea is supported by other researchers who state that you'll gain more weight from fat calories because "it is more efficient to convert dietary fat to body fat than to covert carbohydrate and protein to body fat." Further, that "even on low calorie diets (1,500, for instance), people can become obese if 50 percent of the calories are fat calories." It is also stated that "reducing the amount of fat in your diet is the most important step to weight loss, however, not the only step. Physical activity is the other component of successful weight loss." (Shape, July 1988, p. 94).

Gates, in the article mentioned on p. 146, reports one research study showed that on diets of 1,200 calories, a 20% fat diet yielded greater weight loss than one of 45% fat. Dance Exercise Today, Jan/Feb, 1988, p. 30).

A study conducted by Lauren Lissner at the Cornell University's Division of Nutritional Sciences suggests that people can eat as much low-fat foods as they like and not gain weight. Twenty four women consumed low-, medium- and high-fat foods. Women eating low-fat meals consumed 627 fewer calories a day, although they ate as much as they wanted and lost a pound every two weeks. (Prevention, June, 1988, p.8). Low fat foods are healthier---lower in calories, higher in fiber and therefore bulkier and more filling, lower in sugar, nutrient dense, and high in complex carbohydrates.

A booklet that lists over 1,200 common foods, categorized into percent-fat calorie ranges so that you know the percentage of calories from fat in a particular food, is available from the Arizona Bariatric Physicians, P.C. 444 W. Osborn Road, Phoenix AZ 85013 ($4.00)

You can figure the fat calories in a food that lists grams of fat and number of calories. Each gram of fat has 9 calories. Multiply 9 x the number of grams of fat; divide that by total calories and you get the percentage of fat.

EXAMPLE. A food has 300 calories, and 14 grams of fat.
14 x 9 = 126 calories in fat.
126 divided by 300 = 42% of the calories from this food are fat calories.

BODY COMPOSITION -- LEAN AND FAT WEIGHT

To understand body weight you need to know that the body is comprised of lean weight and fat weight. Lean weight is made up of "good stuff" body tissues such as muscle, bone, lean organ masses and other fat-free tissue, plus a small amount of fat called **essential fat** which is required for life and physiological functions of the various organs in men and women. According to ACSM and other authorities, women need approximately 9-12% of essential body fat (for normal sex hormone control) and men need only 3%. (Howley, p.52.) Essential body fat represents the lower limit at which an individual cannot reduce his body weight without impairing health.

Non-essential fat (storage fat), on the other hand, is excess fat weight that accumulates in the tissue between muscle and skin. In regard to body composition standards, when body fat percentages are 14-17% for men and 21-24% for women, they are considered to be in a **fit** category. When body fat percentages are 23% and above for men and 30% and above for women, they are classified as **obese**. (Howley, p.57). Any of this fat over the desired amount (overfat) is the unnecessary fat that you want to lose on a diet (and exercise) regimen.

DETERMINING OVERWEIGHT OR OVERFATNESS

First of all, how do you know if you are overweight? Most people use their mirror or scales, or refer to various charts that determine appropriate weight levels based on a person's height. Because these charts show average rather than ideal or desirable weight, and reflect weights associated with lowest mortality rates as determined by insurance companies, they have limitations. They do not distinguish between bone, muscle, and fat in individuals. These measures give some clues, but are not the best guide for determining just how much weight you need to lose.

Hellerstein (pp. 53-55) reports that most people use tables to determine ideal weight. In his book, he includes the 1959 Metropolitan Life Insurance Company Height/Weight Table which takes bone structure into account. Using this particular "lighter weight" table, Hellerstein's reversal diet program calls for a body weight within 5 percent of normal as determined by this table.

The U. S. Department of Agriculture's Dietary Guidelines for Americans, Third Edition, 1990, (available free from Consumer Information Center, Dept. 514-X, Pueblo, CO 81009) includes a table with suggested weights for adults which considers height, weight, and age. It also provides a formula for checking body shape, and tips for losing weight safely. (pp. 8-12.)

Bailey (pp.8-13) suggests that you disregard your scales for several reasons. One is that scales do not determine how much "fat weight" you have. Looks are deceiving when it comes to fat weight. Some people may be overweight according to the charts or look like they are overweight (such as football players), but their actual fat weight may be very low. In these cases, most of their weight is lean body weight. In contrast, some thin people have a large amount of body fat. Another factor is that muscle weighs more than fat. Many people believe that they are in fairly good shape because they weigh the same today as they did 30 years ago. If they have been sedentary, they have lost lean body tissue--weighing more--and gained fat tissue.

The best way to determine if you are overweight is to measure the amount of body fat.

BODY FAT NORMS

In the ACSM "Fitness Instructor Workshop and Certification Reference Guide" (p. XIX-35), a chart adapted from Wilmore, J.H., The Physiological Basis of the Conditioning Process, Boston: Allyn and Bacon, Inc., 1982, is provided. The chart classifies the percent of body fat norms for males and females.

Also, Nieman (p. 107) provides a sample testing form for skinfold measurements with norms for body fat which correspond to the chart listed below.

Classific'n	Male	Female
lean	8%	15%
healthy	8-15%	15-22%
plump	16-19%	23-27%
fat	20-24%	28-33%
obese	24%	33%

Norms do not take into account that as one grows older, he/she tends to have a higher percentage of body fat. It is not known whether this can be attributed to the aging process per se or if it is the result of a more sedentary lifestyle, or both.

TESTING: THE MOST ACCURATE WAY TO DETERMINE BODY COMPOSITION

Although there are several testing methods to determine body composition, **skinfold testing** is accurate, convenient, cost effective, and widely used. Physiologists who extensively test body composition caution, however, that the calipers should be of professional quality and recently calibrated, and that the tester should be experienced in determining body composition. (American Fitness, Dec.87/Jan.88, p.54). A professional uses calipers to measure the amount of fat below the skin on several places on the body--abdomen, back of the arm, the thigh. It's a simple, quick procedure that allows for accurate determination of fat percentage within 3% to 5% error of measurement. Another method that is effective, but more costly, less convenient, and takes more time, is underwater weighing. Body composition measurements can typically be done at university, college, and city recreation centers, YMCAs, hospitals, clinics, sports-medicine facilities, and health clubs.

Two new techniques are electrical impedence, which measures the resistance of electrical currents sent through the body, and light interactance, a technique marketed by Futurex 5000 in which a light beam enters the body and the presence of fat changes the spectrum of the light beam. If done accurately by professionals, these methods should give you about the same body fat information.

When you know your percentage of body fat, you can compare that to the average weight for your height or to an ideal weight, determine the percentage you want your body fat to be, and devise a plan for reaching your goal. (See formula in next section.)

FORMULA FOR DETERMINING FAT WEIGHT

Total body weight x percentage of body fat = pounds of fat.
Total weight - pounds of fat = lean body weight.
Present lean body weight x multiplier for desired fat percentage = ideal weight.

Example: A woman weighs 150 lbs. Skinfold testing reveals her body percentage of fat to be 27%. She wants her body fat to be 22%.

150 X 27% = 40 lbs. of fat.
150 - 40 = 110 lbs. of lean body weight.
110 / 1.00 - .22 desired fat) = 110 / .78 = 141 lbs. ideal weight.

Multipliers for desired fat percentages are calculated by dividing 100% by the inverse of the desired fat percentages. For example: if 22% is the desired fat percentage, the multiplier is 1.282 (100% -22% = 78%; 100% divided by 78% = 1.282).

Remember: body composition must be determined for each person, because lean body weight varies among individuals according to bone size and structure, and other genetic make up.

Example: Three women each weigh 180 lbs. Skinfold testing reveals their respective percentage of body fat to be 40%, 32%, and 25%. Their desired body fat (from above norm table) is 22%.
The "before" and "after weight loss" comparisons are as follows.

Before Weight Loss

	Lean Weight (Lbs)	Pct. Fat	Total Weight (Lbs)	Fat Weight (Lbs)
A.	108	40%	180	72
B.	122	32%	180	58
C.	135	25%	180	45

After Weight Loss -- Through Diet & Exercise

	Lean Weight (Lbs)	Desir. Pct. Fat	Multi-plier x Lean	Total Weight (Lbs)	Desir. Fat Weight (lbs)
A.	108	22%	1.282	138	30
B.	122	22%	1.282	156	34
C.	135	22%	1.282	173	38

LOSING WEIGHT

Listed below are steps you need to take for a plan to lose weight.

1. **Calorie Watching.** 15 35 60 120 185

First, determine how many calories you consume a day. Write down what you eat, the proportions of food, find their caloric content, and write down the caloric content of each item. Add the caloric content at the end of the day. Many books, including some cook books list the caloric content of foods. The Complete Book of Food Counts (by Corrine T. Netzer, Dell Publishing Co., 1988) contains lists of over 8,000 foods, providing information on the number of calories in a food, along with the amount of carbohydrate, protein, sodium, fat, and fiber in the food.

2. **Find out your metabolic rate.**

Determine, your metabolic rate; i.e., the rate at which your body burns calories for daily living. There are several ways to do this.

The YMCA book (Zuti, p.182) suggests that, for a moderately active person, you multiply 15 x your body weight to calculate daily caloric expenditure ("burn"). For example, a moderately active 150 lb. person needs to take in 2,250 calories for maintained weight.

Howley (p.61) lists a table to estimate energy expenditure based on body weight and how active a person is during the day.

	Men	Women
Inactive	15-16	13-14
Moderate active	17-18	15-16
High Active	19	17

In the above example, a 150 lb male, somewhat (moderately) active, would need 2,550 calories to stay at present weight; a 150 lb. female 2,250 calories.

A simple way to approximate how many calories to consume to be at your ideal weight is to multiply your energy expenditure based on body weight times your ideal weight. For example, say the 150 lb. somewhat-active

woman determined that her ideal weight was 120 lbs. She would multiply 15 x 120 = 1,800 calories per day. If she had been consuming 2,250 per day, she would need 450 calories less per day (2,250 - 1,800) at the ideal weight of 120 lbs, or to combine exercise with diet control as discussed on pp. 146-148. Limiting herself to this number of calories each day, in addition to increased physical activity will help her each her ideal weight of 120 lbs.

3. Caloric Expenditure During Exercise.

Charts in various books list the calories burned per minute for specific exercise activities. For instance, the YMCA provides a one-page list (Zuti, p.277) of energy costs of various exercises and sports. Sharkey (p.307) provides a detailed list of caloric expenditures of many activities, including everyday energy expenditures such as sleeping, as well as energy costs of various exercises and sports. Kusinitz and Fine list caloric costs for selected activities (p.63 and Appendix B) and also provide detailed guidelines for figuring caloric expenditure for daily activities in their model programs (pp.99-161).

One of the nice features of aerobic computerized machines in health clubs (i.e., cycles, treadmills, rowing machines, and so on) is that they show about how many calories you are burning as you exercise, so you can continue until reaching your caloric goal.

The number of calories a person burns in physical activity depends on how much he/she weighs, as well as other factors discussed in this paragraph. Caloric expenditure is directly related to a person's weight, i.e., heavier people burn more calories doing the same amount of physical activity as a lighter person. The number of calories burned for the given activity depend on the intensity of the workout. Speed as well as terrain and environmental conditions are considered. Energy expended in walking can vary from 4 to 15 calories per minute depending on whether you are walking uphill, how fast you're walking, if you are carrying something, on the gradient, etc. Beginning walkers at about 3.5 miles per minute burn from 5 to 7 calories per minute or approximately 100 calories every 15 minutes. If you are just beginning a walking program, you can expect to burn 5 calories per minute if walking at a brisk pace; if you walk for 15 minutes your first day multiply the calories burned per minute x 5 or you burn at least 75 calories. After two weeks if you walk for 30 minutes you burn up 150 calories. In a month you may be walking 60 minutes, burning up to 300 calories per session. Runners doing a 12-minute-mile burn about 10 calories per minute; however doing a 5 minute mile could burn approximately 25 calories per minute.

You need to get the caloric expenditure to determine the energy you will be expending for the particular activity you have chosen. In many of the books I examined, caloric expenditure of physical activities varied from author to author; so, realize that these are approximations.

Table 13: Estimated Energy Expenditures of Various Aerobic Activities (A rough way to approximate calories burned per activity is to multiply calories per minute times minutes exercised.)

Activity		Calories Per Minute
Aerobic Dance (vigorous)		9
Circuit weight training		13
Cycling:	5.5 mph	3-6
	13 mph	10-11
Hiking (3 mph)		5-7
Jogging (5-8 mph)		10
Running (8 mph)		15-16
Skating:	slow	5
	rapid	11
Skiing–		
cross country:	2.5 mph	9
	8 mph	17-20
downhill:	moderate	10-12
Swimming:	25 yards per min.	5
	50 yards per min.	9
Skipping rope	vigorous	13
Walking	2 mph	4
	4-5 mph (fast)	7-8
Racquetball		10

Most physiologists (such as Sharkey and Kusinitz) use body weight figures as well as exercise intensity to get the total number of calories used during physical activity.

4. Determine Total Energy Expenditure.

To determine total energy expenditure add basal metabolism expenditure to energy expenditure in exercise.

In our previous example, a woman of 150 lbs would need 2,250 calories to maintain weight. If she expended 300 additional calories, she would need 2,550 just to maintain this weight.

If she wanted to lose 12 lbs, she could cut back on caloric intake by 200 and walk 60 minutes (burning up 300 calories), taking in/and or burning up 500 calories less per day or 3,500 calories per week, thereby consuming 1,750 calories per day and losing 1 lb per week or 4 lbs per month. In three months, she would lose 12 lbs. If she wanted to lose more weight each week, she could either cut back on calories more, or walk more, or both. Recall though, that two lbs. per week is the maximum that anyone should try to lose.

5. Be Patient.

Realize that how quickly you lose, and how quickly your metabolism is raised due to exercise, will vary depending on other factors (such as age, hormones... listed in this chapter on p.143, paragraph 5). Also, as mentioned previously, don't depend on the scales to show all the results, since muscle weighs more than fat. You will gradually begin to notice that your clothes are looser and your weight is better distributed. In three to six months, have another body composition test to determine the actual amount of fat lost, to help reconfirm your actions.

Other Weight Loss Approaches.

Determining energy intake against energy expenditure is a safe, healthy, and effective way to approach weight loss. However, if you do not want to count calories and figure energy expenditure, there are some weight control programs which do not rely on counting calories. (Some of these are abstracted in the Appendix, such as R. Pritikin's and C. Bailey's--both of whom have developed their own healthy eating weight loss plans. Pritikin uses an exchange food system and Bailey uses a fit and fat target framework.) You can also find a variety of available books with daily menu eating plans based on number of specific calories per day, for example, from 1,200 on up. When examining the specific calories per day programs, measure them against goals and guidelines presented in this chapter on pp. 145-146.

SOME DO's and DON'Ts FOR LOSING WEIGHT

1. **Don't eat after 7:00 P.M.** If you do eat later in the evening, eat light and take a walk if possible. When convenient, plan to serve main meals earlier in the day, around noon or shortly after. This can work well on the weekends, for example. If you exercise after work, eat a light meal, low in fat and calories. Even though you are eating late, after exercising, your "revved up" metabolism will be burning calories for the next 6 or so hours.

K. Cooper (p.65) suggests if you want to lose weight to eat 25% of your daily calories at breakfast, 50% at lunch, and 25% at dinner.

Get in the habit of brushing your teeth right after eating. You will be less likely to snack afterward.

2. **Contemplate your schedule each day and plan your menu.** Take control of what you eat. If you have a demanding day that will require you to burn up lots of calories, eat

high complex carbohydrates. If you have planned a day that requires light/moderate caloric expenditure, eat light meals, such as wholesome broth vegetable soups, garden salads with low calorie dressing, steamed vegetables, and/or fresh fruits.

3. If you are overweight, by five pounds for example, **visualize** what five pounds of hamburger looks like in size. It can serve as motivation to get rid of the excess!

4. **Develop interests other than food.** Enjoy people, books, the outdoors, etc. Don't focus all of your thoughts on food. Eat to live.

5. **Eat in an aesthetically pleasing environment.** Some studies show that dining to slow music results in eating less. Jon Kabbat-Zinn suggests eating a meal mindfully. He suggests observing the colors and textures of your food, as well as contemplating where the food comes from and how it was grown or made. He also advises listening to your body and trying to detect when you have had enough. (Kabat-Zinn, pp. 408-409.) **Chew each bite and eat slowly.** It takes 20 minutes after you eat something to feel full and get the satisfaction.

6. **Eat healthy.** In summary, to lose weight: U.S. Department of Agriculture dietary guidelines suggest--

Increase physical activity.
Choose a diet low in fat, saturated fat, cholesterol.
Eat foods with adequate starch and fiber; choose a diet with plenty of vegetables, fruits, and grain products.
Use sugar and sodium in moderation.
If you drink alcohol, do so in moderation.

(U.S. Department of Agriculture. Nutrition and Your Health-- Dietary Guidelines for Americans. Third Edition. Home and Garden Bulletin No. 232. Washington, D.C.: U.S. Government Printing Office, February, 1990.)

Read Chapter 10 on nutrition and follow the eating tips discussed there. Good nutrition is the foundation of a weight loss program. Incorporate good eating habits everyday to form life long habits. Ronda Gates points out that even when you are following U.S. Dietary guidelines of 30% fat and 10% refined sugar, this can result in 40% empty calories (nutrition free calories). In this illustration, if you are on a 1,200 calorie diet you would eat 720 nutritional calories, which would be inadequate to supply everything your body needs daily to function efficiently. (Dance Exercise Today, Jan./Feb., 1988, p.30.) Ideally, you should try to get as close as possible to filling your calorie needs of 1,200 with nutritional foods. Sensible, healthy eating with slow, steady weight loss will help toward maintaining your proper weight.

Many articles report that women in 1988 were more aware of the need to eat healthy, however, their diets lacked essential nutrients. Shape (July, 1988, p.81-85) presents an article on how American women eat as reported in a Continuing Survey of Food Intakes of Individuals (CSFII), a report issued by the U.S. Dept. of Agriculture (USDA), 1985. The article author examined how diets of 1985 (as compared to 1977) measured up against Federal Guidelines. In short, it is reported that more than 80% of women fail to achieve RDA's for calcium, magnesium, Vitamin B6, zinc, iron, and folacin. American women get 37% of their calories from fat, eat too much sugar and sodium, and not enough fiber.

7. **Don't take diuretics** (unless prescribed by your doctor for high blood pressure) to lose weight. You will lose water, not fat.

8. **Drink at least 8 glasses of water daily.** Water satisfies certain desires for food. When you feel hungry, drink a glass of water.

9. **Increase physical activity everyday, naturally.** Use stairs rather than the elevator, deliver messages at work. Take short walks. Move around.

10. **Swimming May Not Be A Good Activity for Weight Loss.**

Although swimming is an excellent cardiovascular exercise that works and tones all major muscle groups and has a low risk of injury, recent studies indicate that if you are exercising for weight loss, swimming may not be the most ideal form of exercise.

Covert Bailey (Fit or Fat, p. 39) does not recommend swimming as an activity for losing weight. He emphasizes that swimmers do not add weight, but don't usually decrease it either. He states that "there is no reduction in fat when a person embarks on a swimming program and that this has been substantiated by his clinic, Stanford University's water immersion testing program, and Dr. Ken Cooper's clinic in Texas."

A study done at the University of California at Irvine Medical Center, conducted by Dr. Grant Gwinup, showed that swimmers gained body weight, while stationary cyclists and walkers lost body weight. Gwinup speculates that swimmers may not lose weight because water removes energy in the form of heat from the body 30 times more efficiently than air. It is possible that the body seeks to maintain its insulating fat tissues more readily in swimming than during other exercise. (American Health, Sept. 87, p. 30). Therefore, if you are exercising primarily to lose weight; you might choose an exercise other than swimming or pair swimming with other exercises.

11. **Use visualization and imagery techniques.** Visualize yourself slimmer. Visualize the benefits gained from being slimmer; i.e., better health, appearance, and feeling. Involve all your senses. What will you look like? What will you hear from others?

EAT AND EXERCISE FOR LIFE!

You want to establish a lifetime approach to good eating, along with exercising to maintain your proper weight. Forget the "get-thin-quick" approach and realize that you have the rest of your life to establish a lifetime program of choosing a balanced diet of healthy foods. Following the guidelines in Chapter 10, you can enjoy a wide variety of foods and exercise regularly for weight loss as well as weight maintenance.

FILL IN YOUR WORKSHEET

Below is a weight loss worksheet designed to give you a simplified but full understanding of the principles, while estimating your own weight loss plan.

YOU CAN DO IT!

Worksheet II: WEIGHT LOSS WORKSHEET*

(* This is a simplified version. If you want more precise calculations, see one of the books referenced in the abstract section.)

STEP 1. HAVE BODY COMPOSITION TEST TO DETERMINE "FAT WEIGHT."

My percent fat weight as determined by the test is _____%.
My desired fat weight that I would like to attain is _____%.

STEP 2. USE THE FORMULA BELOW TO DETERMINE YOUR "IDEAL WEIGHT."

_____ Total Current Weight X ._____ Current Percent of Fat = _____ Current Lbs. of Fat.

_____ Total Current Weight - _____ Lbs. of Fat = _____ Lean Body Weight.

_____ Curr.Lean Body Wt. div. by (1.00 - .___ Desired Fat %) = _____ Ideal Weight.

_____ Total Current Weight - _____ Ideal Body Weight = _____ Lbs. of Fat to Lose.

Example: 150 lb. woman with 27% body fat wants desired body fat of 22%.
150 Total Current Weight X .27 Current % of Fat = 40 Current Lbs. of Fat.
150 Total Current Weight - 40 Lbs. of Fat = 110 Lean Body Weight.
110 Lean Body Weight div. by (1.00 - .22 Desired Fat %) = 110 div. by .78 = 141 Lbs. Ideal Weight.
150 Total Current Weight - 141 Ideal Body Weight = 9 Lbs. of Fat to Lose.

STEP 3. DETERMINE DAILY CALORIES YOU CONSUME. (You will need a book that lists caloric content of foods.)

BREAKFAST:	PORTION SIZE	CALORIES
_____	_____	_____
_____	_____	_____
_____	_____	_____
SNACK:		
_____	_____	_____
LUNCH:		
_____	_____	_____
_____	_____	_____
_____	_____	_____
SNACK:		
_____	_____	_____
SUPPER:		
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
SNACK:		
_____	_____	_____

TOTAL CALORIES PER DAY: _____

STEP 4. ESTIMATE CALORIES BURNED OFF THROUGH DAILY ACTIVITY (based on body weight and physical activity).

o Choose your present activity level from the below chart:

	Sedentary	Moderate Active	High Active
WOMEN	13	15	17
MEN	15	17	19

o Calculate approximate daily energy expenditure:

_____ (Activity Level) X _____ (Weight) = _____ (No. Calories Expended)

STEP 5. DETERMINE DIFFERENCE BETWEEN CALORIC INTAKE AND EXPENDITURE:

____ __ No.Calories Taken in Daily -- from Step 3

-_____ Minus No. Calories Expended -- from Step 4

=_____ No. of Daily Calories I Need to Reduce in Order to Maintain Weight

STEP 6. COMBINATION OF REDUCED CALORIC EXPENDITURE (eating) AND INCREASED PHYSICAL ACTIVITY (exercise) PROMOTES GOOD WEIGHT LOSS PROGRAM:

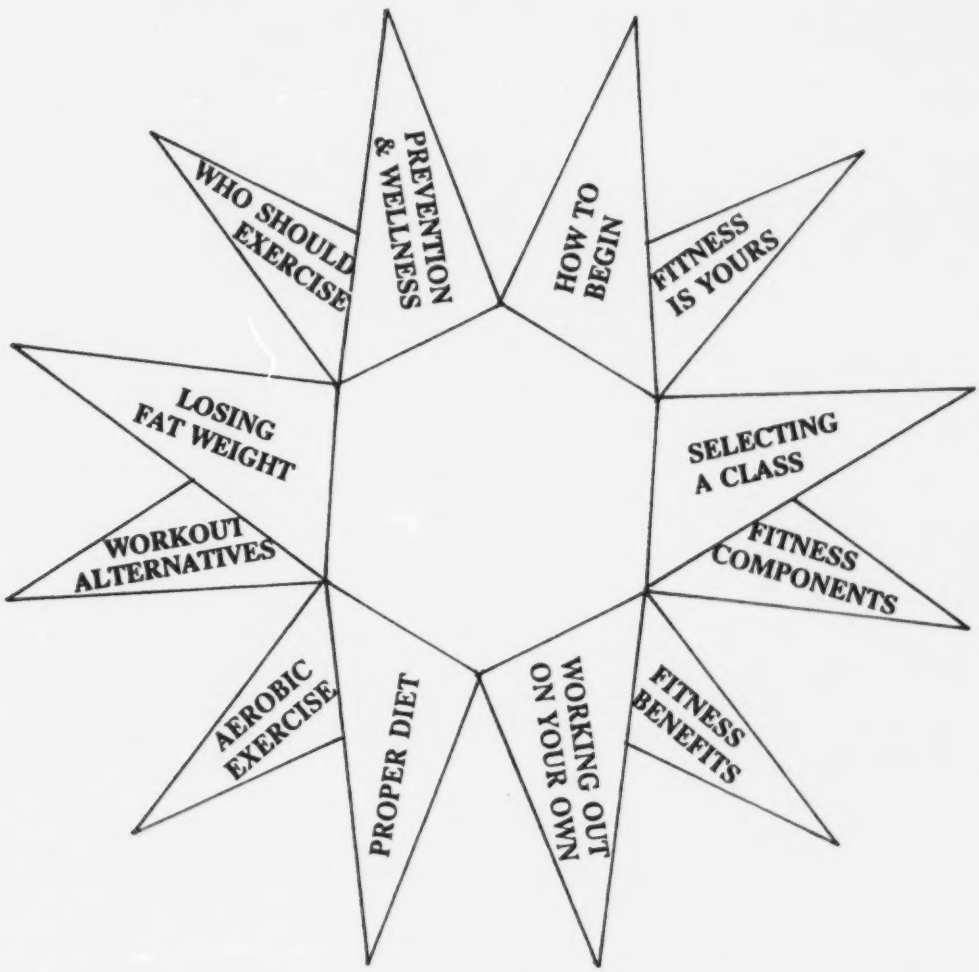
o Determine number of calories you want to reduce by caloric deficit and increased physical activity.

_____ No. Calories to Lose by Reducing Caloric Intake. (This could be, for example, the Step 5 difference between current intake and expenditure.)

>>>> Go back to your Step 3 "Daily Calories Consumed" worksheet and decide exactly which food items you are going to reduce!

_____ No. Calories to Lose (burn) by Additional Exercise. (This could be, for instance, one of the activities from the "Estimated Energy Expenditures of Various Aerobic Activities" on p.10. (Example: Say you want to burn an added 350 calories and you select fast Walking-Hiking, at 7 calories burned per minute. Divide 350 by 7 and you get 50 = minutes of walking-hiking daily to burn the 350 calories.)

12. HOW DO YOU PREVENT HEALTH PROBLEMS?



12. HOW DO YOU PREVENT HEALTH PROBLEMS?

INTRODUCTION

You can do a great deal of personal "prevention" to be healthier, avoid illness and disease, and live a more productive, higher quality life! In fact, you can save personal dollars as well as societal dollars by practicing prevention!

Much of this book is about making personal choices to help live a healthier life--what choices, why, where, when, and how to make them. More knowledge than ever about how to have good health is available to us now. Research is continually showing us how to improve our wellness. Yet, this knowledge is not applied by the masses of people in regard to exercise, nutrition, and healthy habits.

The editors of Behavioral Health note in their preface: "A general lesson from the history of medicine is that prevention usually is much more effective, and especially more cost-effective, than are treatment and cure. In spite of this lesson, prevention--in the form of investment of resources relative to cure--often receives far less attention than it merits, primarily because its effects are not immediate." (Matarazzo, p. xiii.)

"Right now we spend more time reacting to medical-care problems than anticipating them. The focus has to shift to prevention and wellness, and public education has to play a more active role." (Michael Debakey, Baylor College of Medicine in Texas, reported in Longevity, September, 1989, p.90.)

Leonard Sagan notes "Heroic means of treating the dying are consuming much of our medical resources while effective means of preventing illness and disease...are being ignored." (Sagan, p.84.)

Susan Richmond (Changing Times, Dec., 1990, p.92) consulted with health policy expert Willis Goldbeck who predicts that health services will diminish at the same time costs will rise; more health costs will shift from businesses to individuals; and medicare recipients will be paying more out-of-pocket costs. Goldbeck also advises "take care of yourself...make preventive care a priority."

Today we have more things to do, more money to do it, and more diversions, yet drugs are a serious problem. Although we have knowledge on how to manage our health to reduce high medical costs, these costs are out of sight. This rapid increase in health cost comes at a time when Americans want to improve their health, and to understand what can be done to prevent diseases. The knowledge we have needs to be put into practice.

All of the information and tools for good health are available; however, constraints exist that make it difficult to apply the knowledge, and temptations can easily lead us astray. For example, although we know that we should exercise, there are so many demands on our time that it takes real motivation and effort to make the time for exercise. Diversions from exercise include work (Americans are putting in longer hours at work), TV which people spend hours look at, and hosts of other "inactivities" one finds interesting. It's easy to become sedentary today.

The importance of following a healthy lifestyle is illustrated by a paragraph from the book New World New Mind: "If all cancers could be cured by a magic bullet overnight, then the average life expectancy would increase by a mere two years, according to

estimates by Beverly Winikoff, a physician at Rockefeller University. If good nutrition, exercise, and good health habits (especially not smoking) were followed, average life expectancy would increase by seven years." (Ornstein, p.121.)

Eight years ago Hamburg stated: "Half of the mortality from the ten leading causes of death in the United States is strongly influenced by lifestyle. Known behavioral risk factors include cigarette smoking, excessive consumption of alcoholic beverages, use of illicit drugs, certain dietary habits, insufficient exercise, reckless driving, nonadherence to medication regimens, and maladaptive responses to social pressures. (Hamburg, D.A., Health and Behavior --Editorial--, Science, 1982, p.217.)

We know we should practice good health, and that to do so we have to take time to acquire the knowledge and then put it in into practice. It takes ingenuity and thought to eat healthy.

To maintain a high level of wellness, which incorporates prevention principles, you need to be motivated, disciplined, and determined. You have to want it and practice it to get it. It is well worth it!

COSTS OF POOR HEALTH PRACTICES IN LIVES

The leading cause of death in the U.S. is coronary heart disease. The American Heart Association (AHA) reports that heart attacks, strokes, and blood vessel diseases kill almost one million people a year (much more than all those Americans killed in the four major wars of this century). Further, AHA reports that approximately 1.5 million people have heart attacks--600,000 of whom die. Another 500,000 suffer strokes--of whom 125,000 die. 1988 National Center for Health Statistics figures are even higher--767,400 people died from heart disease; 150,300 from strokes. (American Health, June, 1990, p. 48.). Other reports note that each year over 50,000 Americans have bypasses--costing over $10,000 each. Unhealthy life styles are said to be responsible for seven out of ten deaths among the population.

Dr. Hellerstein, in his book which presents a program to reverse heart disease, makes an alarming statement that "seven out of ten American males over the age of thirty have some signs of heart disease. And 40 percent of those with heart disease won't know it until they suddenly suffer a heart attack or death." (Hellerstein, p.12.)

The 1988 Surgeon General's report on health notes that diets high in fat contribute in a major way to five of the ten leading causes of death in the U.S.: heart disease, stroke, diabetes, some types of cancer, and atherosclerosis. Healthy lifestyle changes can alleviate unnecessary rising health costs, needless personal suffering, and lost productivity and wages.

COSTS OF HEALTH CARE IN THE U.S.-- IN DOLLARS $$$

U.S. spending on health costs is the highest per capita in the world. Statistics from federal reports on high and escalating costs of health care in the U. S. show these costs are rising out of control. Although such statistics vary somewhat among reports, the data show that in comparison to 1950, when the U.S. spent approximately 4.4% of GNP on health care, costs are increasing at an alarming rate. In 1987, 10%; and in 1988, 11.5% of GNP was spent on health care. In heart disease alone, the 1988 Surgeon General's report indicated that nearly $50 billion a year is spent on health costs and lost productivity. "Last year we spent more than $600 billion on health care, almost 12 percent of our GNP, or as

much as we spent for defense and education combined." (Celente, p.100.) The evidence is that the upward direction in health costs will continue. Some estimate that by the year 2,000 health care costs are expected to rise to 1.5 trillion.

Considering that the preponderance of these illnesses could be avoided if prevention were practiced on a wide scale, the present dollar costs are an unnecessary, enormous waste!

Further, federal reports indicate that yearly health care costs per person (every man, woman, and child) are more than $2,000 per year. According to government reports and the U. S. Chamber of Commerce, the average American corporation spends over $2,000 annually per employee to provide health benefits.

Future Medical Trends and Costs $

Unless major changes occur in the U.S. health care system, it will be in a crisis by the year 2000. Today millions of Americans are uninsured because the costs are prohibitively high and many employers are not covering insurance costs. By 2000, increasing demands will be placed on the health care system by the aging population. Futurists predict that medical treatment will be rationed for a variety of services and care; there will be fewer doctors because fewer people will choose to enter the medical profession; and government benefits (such as Medicare) will be drastically cut and available to only the very poor.

Jeff Blyskal, in "The Health and the Wealth to Live Longer," (Longevity, March, 1991, pp. 56-65) notes that baby boomers can expect to live a third longer than their parents. He projects future trends and offers financial planning ideas needed for living a long life. He states that health should be your first investment and says "Fitness is the foundation on which your entire economic house is built--from your standard of living to your very ability to keep living. Poor health keeps you from maintaining and maximizing current income, and attendant medical costs can drain your assets." (p. 59)

Insurance Costs. $

Employers who provide medical insurance for their employees pay for a substantial amount of these increasing costs. Responding to 20 to 30% increases in the cost of employee health insurance premiums, employers are forced to not only decrease coverage, but also increase out-of-pocket costs for employees. This costs everyone. Insurance corporations respond to rising health costs by raising their rates, which rose from 2 to 10% in the past to 20% to 30% and in some cases from 50 to 150%.

HEALTH COSTS CAN BE CUT BY TAKING PERSONAL RESPONSIBILITY

Increases in health costs are blamed on such things as technology, aging population, mismanagement, wage inflation, high doctor fees, and corporate takeover of health systems which encourage overuse. Little, if nothing, is attributed to how each person needs to assume responsibility for maintaining a healthy lifestyle to reduce costs. Some authorities claim that poor choice lifestyle behaviors are responsible for approximately 50% of all illnesses.

Much of the suffering and cost of preventable disease could be reduced through simple lifestyle changes involving exercise and good nutrition. The Surgeon General's report indicates that lives could be saved and suffering eliminated if people cut down on fat, alcohol, salt, calories and increase their intake of fruits, vegetables, and fiber. Although bypass operations save lives, alleviation of

underlying problems is only temporary, unless accompanied by permanent lifestyle changes that foster preventive techniques. Dr. Goor states that "Bypass operations may eliminate the symptoms of heart disease; but they do not cure the underlying atherosclerotic process, which goes on depositing fat in your coronary arteries. ...it is common for such grafts to close completely within three to five years. This need not happen." (Goor, p.31.)

Artificial heart transplant operations have not been successful, other than experimentally. They add little in years and even less in quality of life. It is much less costly in money, lives, and suffering to keep our hearts in healthy condition through the years--we are not likely to get replacements soon. Ellen Goodman reported that over the years the government has spent over $250 million on artificial heart research. She states that in 1983 the National Heart and Lung Institute speculated that even if an artificial heart transplant was successfully developed, it would only add an average of 4-1/2 years to a patient's life, of which an average 2-1/2 years would be spent in hospitalization during the time--costing 3 to 7 billion a year more to the national health bill. (Daily Camera, Jan. 16, 1990, p.4a.)

COST BENEFITS OF WELLNESS AND PREVENTION

The personal physical, mental, social, and spiritual benefits of fitness and health are listed in chapter three. Not discussed, however, are a few benefits of wellness in regard to cost.

It is said that health research statistics show that for each dollar spent on preventive medicine, about three-dollars is saved on medical costs. "General Motors noted a few years ago that the company spent more money on sickness than it did on steel." (IDEA Today, March, 1990, p.62). It is ironic that in light of these figures, health insurers do not now recognize the value of the savings from preventative care, and do not as a rule pay for preventive programs.

Statistics on corporate fitness programs, however, show the success of preventive programs. IDEA magazine reports that several businesses implemented corporate fitness programs: New York telephone saved over $2.5 million dollars a year on absentee/medical costs, employees at a Rhode Island Health Maintenance Organization had 35% fewer visits to doctors for minor illnesses, and Kennecott Copper Co. saw a 55% drop in medical care costs. Further, a four-year study by Milliman & Robertson, Inc., found that sedentary employees had 30% more hospital days than exercisers. (IDEA Today, Sept. 1988, p. 8). In another issue, IDEA Today reports on several studies which show that work-site exercise programs reduce health costs for corporations and employees. Example: Tenneco conducted a study that showed annual average health costs for sedentary people compared to those exercising. Costs for sedentary females was over $1,500., exercising females $600.; sedentary males $1,000. in health costs, exercising males $561. The article reports that other companies substantiate this ratio. (IDEA Today, March, 1990, p.62).

More good news about corporate fitness programs. IDEA Today (Oct., 1990, p.5) reports that over 100 work-site health promotion managers attending a conference in Fort Worth, Texas, agreed that implementing a health promotion program cuts health care costs, absenteeism, and improves employees productivity and health.

The Coors Company of Colorado has conducted a cost-benefit analysis of their own on-site wellness program. Analysis shows that

the program saves money and increases employee productivity. The report states that "for every dollar invested in the program,the company obtains a return ranging from $1.24 to $8.33; ...yearly savings could run as high as $23 million." Boulder County Business Report (4885 Riverbend Road, Suite 200, Boulder, CO 80301), March 1991, pp. 5,7.

A recent report critically examines economic advantages and gains for sponsoring corporations which offer employee corporate fitness and lifestyle programs, by R. J. Shephard. He says "Possible sources of financial benefit to the employer include an improved corporate image, facilitation of employee recruitment, an increase in the quality and quantity of production, a decreased rate of absenteeism, a lower turnover of employees, reduced health care costs, and a lower incidence of industrial injuries." (Shephard, R. J. "The Costs and Benefits of Exercise: An Industrial Perspective," pp. 189-204, in Fitness for the Aged, Disabled, and Industrial Worker. International Series on Sport Sciences, Volume 20. Human Kinetics Books, 1990.

Some insurers offer discount plans to small companies that can show their employees follow good health practices. INC. (Nov. 1988, p.148) reported on three companies--The Prudential, Travelers, and John Alden Life Insurance Company--that query employees on their health and lifestyle practices to determine if a company is qualified for a discount. If these forward looking companies set a precedent, more companies may follow their lead. When employees practice wellness everyone saves money--the insurance companies, businesses and corporations, and results in personal savings to the individual.

Some large companies that promote corporate wellness programs are participating in self-insurance plans. The underlying philosophy is for companies to design and implement their own health coverage plan which rewards employees for staying healthy. These companies can offer their employees reduced medical insurance costs as well as cash bonuses or extra paid days off as rewards for following healthy lifestyle habits and for staying healthy.

Prevention magazine predicts that "by the year 2000 the insurance industry will realize that reimbursing for preventive programs and treatment makes sense." (Jan., 1990, p.36).

THE MEANING OF HIGH LEVEL WELLNESS

I've discussed the need for exercise and nutrition, both of which contribute greatly to prevention of diseases. There are other important considerations to improving our health, though, that include stress reduction, healthy habits, and other positive, life-enhancing, psychological and environmental needs. Some of these considerations are recognized by the U. S. Public Health Service in their "Healthy People 2000" plan, which presents national health objectives to be reached by the year 2000. In addition to increasing the number of children and adults who participate in physical exercise, the plan considers other life enhancing qualities such as nutrition, family planning concerns, and environmental health. High Level Wellness (HLW) encompasses a state of positive health as explained in the next two sections.

High level wellness (HLW) is a wholistic approach that addresses the entire person, incorporating the concepts of fitness, health, and prevention. It entails unity of mind-body-spirit, suggesting the working together of the physical, mental, emotional, social, and spiritual, as well as a good environment, to ensure the highest functioning level of an individual--promoting well-being, happiness,

vitality, and energy levels beyond normal. It moves beyond the older concept of health (the absence of disease, illness, or other abnormal conditions) to include prevention concepts--taking actions to slow, stop, or break up illness or to lower the risk of diseases. Further, HLW insists on people taking responsibility for lifestyle changes to improve their health and well being. Self-responsibility is an important part of getting to a high level of wellness.

HLW also emphasizes leading a balanced life and is not given to excesses in one's lifestyle. Wellness means maintaining proper balances concerning lifestyle, emotions, and work and living environments. For example, overexercising may result in injury and being run down. Exercise needs to be not only appropriate for level of fitness, but also balanced by rest. Further all three fitness components need to be included in an exercise program. Many aerobic activities (like running) lead to stiffness and injury unless accompanied by flexibility and strength training. It is important to keep muscle balance by strengthening opposing muscle groups to avoid injury.

In regard to balance in other areas, to get all the nutrients one needs, a balanced diet is required; a little sunshine is desirable and helps vitamin D become assimilated (when elderly people in Florida shunned sunshine they were more susceptible to osteoporosis), but prolonged hours in the sunshine are harmful. An important overall concern is to keep a balance in all activities, so that physical fitness is balanced with mental, spiritual, and social activities, and a well-rounded lifestyle results. Keeping lifestyle balance means maintaining good relationships, satisfying life work, and favorable environmental conditions.

Leonard Sagan presents a thesis that "the most powerful factor influencing life expectancy is modernization. (Sagan, p. 10.) He believes the decline in death rates worldwide is due to the rise of hope and decline in hopelessness. In his last chapter, he notes that characteristics such as developing self-esteem and good relationships with others result in better health, asserting that "I am not opposed to regular exercise; indeed, the evidence is that regular exercise is useful. Rather, it is a matter of priorities, of moderation in all things. Creating and improving relationships with others and learning to communicate effectively are as important as aerobics. Our lives depend on both." (Sagan, p. 190.)

High level wellness is not a state one reaches but is one of progressive improvement. It means educating yourself through study and research about health, synthesizing the information, making decisions for yourself, and then practicing good habits. People who practice high level wellness function and perform at their peak.

CONTROL OF YOUR WELLNESS

HLW allows you to be happy and productive. Emerson said "The First Wealth is Health" and how true that is. Good health, a gift that must be nourished, is an essential ingredient for approaching any goal in life.

You can do more to improve your health than anyone else. Take control of your lifestyle--no one else can do it--no--not even your doctor. Wellness maintenance is not something that can be done <u>for you</u> by your doctor or government health plan; it can only be done <u>by you</u>.

Take the responsibility for your health, and professionals including doctors, exercise specialists, and nutritionists can give <u>guidance</u>. Only you can put into practice the healthy habits listed on p. 168.

In regard for the need for Americans to take more responsibility for their health, American Health reports on a new 300-page government report generated by a task force titled, "Guide to Clinical Preventative Services." The report recommends that doctors urge patients to remain more in control of their own health decisions in regard to major risk factors for disease. It suggests that physicians help patients control their health, and when necessary, change their personal health behavior to prevent the leading causes of death in the U.S. Specifically (if the recommendations go into effect) doctors are advised to motivate patients to quit smoking, use safety belts, follow a proper diet, exercise, and follow safe sex practices. (American Health, Jan/Feb, 1990, pp. 9, 12).

Three of the many books focusing on wholistic wellness abstracted in the Appendix are: Robert Cooper's Health and Fitness Excellence; Weil's Natural Health, Natural Medicine; and the Samuels's The Well Adult.

Wholistic health encompasses the concept of connectedness. Dr. Dean Ornish discusses the possibility of whether there are common psychological and spiritual factors that lead to heart disease, and summarizes various research studies to show that while isolation can lead to illness, factors which promote healing include intimacy, social support, and a feeling of connectiveness. (Prevention, Feb., 1991, pp. 60-66, 135, 136, 140, 141.) Weil also discusses the health implications of isolation compared to wholeness in a chapter entitled "Connections" (pp. 149-158). The chapter emphasizes the importance of overcoming the "illusion of separateness and experiencing unity." His ways to reduce self-centeredness are: connect with nature and the earth, animals, family, community, and a higher power, and serve, love, and touch others.

Another recent book that focuses on all aspects of wellness is A Year of Healthy Hints: 365 Practical Ways to Feel Better and Live Longer, by Don R. Powell, Ph.D., Rodale Press, 1990. This prevention-oriented book covers ways to relieve common health problems; prevention, detection, and treatment of major medical conditions; fitness; nutrition; weight loss; stress; emotions; substance abuse; women's and men's health problems; sex; better health for those over 55; travel hints; safety measures; dental health; and medical care.

Having good health does not take that much time or effort, but does take some discipline, commitment, and thought. The healthy habits listed on the following chart interact synergistically to create high level wellness.

Table 14: HIGH LEVEL WELLNESS--HEALTHY HABITS

For HLW follow these healthy habits:

To maintain physical fitness (based on existing knowledge)--	To maintain emotional and mental fitness--
Participate in quality exercise, consistently, at appropriate level;	Feel good about life by developing positive attitudes --be happy, smile and laugh often, and maintain a sense of humor;
Eat a healthy diet;	Be aware of, accept, and manage feelings, and learn to control your emotions;
Eat breakfast;	Have or make your job satisfying;
Maintain proper weight;	Learn breath control as a calming procedure;
Get adequate rest and sleep (6-8 hrs.);	Don't worry; instead, learn to relax and be less anxious;
Don't smoke;	Develop, know, pursue goals and have a purpose in life;
Control alcohol and caffeine consumption;	Promote brain fitness; pursue knowledge;
Don't take drugs;	Pursue creative, stimulating, intellectual activities;
Seek health care, have annual physical checkups, learn to use the medical system appropriately;	Develop confidence to solve problems;
Practice good hygiene;	Have a commitment (curiosity and involvement) in life;
Practice good dental hygiene;	Manage your time;
Practice safe sex;	Develop wholesome loving and trusting relationships with family and others;
Live in an environment with clean air and water.	Develop social support systems with family, friends, and fellow workers;
	Enjoy leisure activities;
	Learn to meditate and develop spirituality;
	Generate connectiveness with people, environment, and life;
	Place a high value on health;
	Develop self-esteem;
	Learn to communicate effectively.

MIND-BODY UNITY

An excellent book that shows how to take control of your physical, emotional, spiritual, and social well-being is Joan Borysenko's Minding the Body, Mending the Mind (see abstract in the Appendix).

Another good mind-body healing book is Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness. (Jon Kabat-Zinn, Delacorte, 1990.) Focusing on how to handle life's problems in a wholistic manner, the book takes the reader through the University of Massachusetts eight-week Stress Reduction and Relaxation Program developed by Kabat-Zinn, the Director.

Illustrative ways to integrate mind and body include:

o classes and practices that foster the mind/body approach (yoga, martial arts, Feldenkrais and Alexander techniques, team sports, and dance--all of which demand body alignment and awareness, and concentration).

o practices to improve positive attitudes, relaxation, and mental health (meditation, biofeedback, visualization and imagery, massage, breathing, neurolinguistic programming, positive affirmation).

o group activities that promote good relationships and pleasure (team sports, recreation activities, and families exercising together, promoting closeness).

JOB SATISFACTION

Engaging in useful work contributes to living a balanced, wholistic lifestyle. "If you don't believe in what you are doing, either find a way to believe in it so that you do have a positive attitude, or find something that you do consider worth your time and energy." (Loehr and McLaughlin, p.53.)

Sue McKibbin (Shape, Nov., 1990, pp.46-47) discusses the need to engage in useful and meaningful work and for career-oriented persons to find personal time for life enrichment activities. She recommends discovering work that integrates both the personal and professional selves. McKibbin notes that fulfilling work involves not only doing the desired type of work, but also being comfortable with the work circumstances, i.e., liking and being able to establish a sound working relationship with other employees and supervisors, and working in a healthy workplace--summarized here as one in which there is a shared purpose, team spirit to produce quality products and services, responsible leadership, permission to be creative, and one in which the people are competent and caring.

Two handbooks that stress the importance of finding meaningful careers, show how to pursue work you love to help you live a productive and balanced life filled with happiness and satisfaction, are:

Do What You Love, the Money Will Follow: Discovering Your Right Livelihood. Sinetar, Marsha, Dell, 1987.

Work With Passion. How to Do What You Love for a Living. Anderson, Nancy. Carroll and Grof Publishers, Inc., 1984.

"FITNESS" DOES NOT ALWAYS INCLUDE "WELLNESS" (BUT IT SHOULD)

Several common practices considered to be part of fitness or that seem to be associated with fitness are not healthy. Some of these include the following:

Improper Weight Loss. Many diets are actually harmful to one's health because they don't provide all the needed nutrients, as well as being faulty in other regards (see p.147). Some liquid diets provide only temporary weight loss, because they fail to promote behavior changes required to integrate good lifetime eating habits. Thinness, often viewed as an aspect of fitness, is not healthy for every body type. Having low body fat is healthy, and a large framed, muscular person with low body fat may not look thin, but is healthy.

Ignoring Nutrition. Although less now than in past years, some athletes and others ignore good nutrition habits, indulge in junk foods, yet consider themselves "fit" and healthy because they exercise.

Unhealthy Amenities and Practices in Health Clubs. Some health clubs and other recreation centers touting fitness promote unhealthy practices, such as filling vending machines with junk food, rather than offering healthy choices. A few have bars serving alcohol.

Faulty Teaching Methods in Classes. Sometimes teaching techniques are promoted that are stressful or could cause injury, and centers often permit very loud music in class that can eventually cause hearing damage.

Tanning Booths. Some clubs have tanning booths, which are not a part of fitness. Body building contests, (and some aerobic contests) suggest / require that contestants be tanned. Tanning booth rays are damaging to the skin.

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Steroids. Although most weight lifters do not take steroids, some do. Steroids are harmful to one's health. Dangers include aggression, mental problems, baldness, mental problems, and heart and liver disease.

Personal Choice of Unhealthy Practices. Flaws in personal decision making lead people on unhealthy paths. For example, the inexperienced in fitness often think if moderate exercise is good, more is better. What some do in the name of fitness is unhealthy. An avid overexerciser with chronic injuries that never heal needs to rest, modify, and diversify to include different forms of exercise that won't aggravate the injury. To be fit is to be aware of the body and the state it is in at the particular time of exercise. When present, fatigue, illness, injury, muscle soreness need to be considered in an exercise program. Fitness should mean feeling GOOD, it does not mean pain. The body is a marvelous machine that will help us perform up to our potential when wellness common sense is employed.

OTHER HOW-TO'S OF WELLNESS: IN THE ENVIRONMENT, AT HOME, WORK, AND TRAVELING

Much of the entire book tells how to incorporate wellness into our life through practicing good nutrition, exercising, building and practicing healthy habits to maintain a healthy lifestyle. Here are a few bonus suggestions not included earlier.

Wellness in the Environment

The link between maintaining good health and the environment is obvious--we can't be well living in a harmful environment. Damage to the environment threatens not only human lives but all other life on earth as well, and contributes to higher health costs. Celente notes: "They [our leaders] don't make the connections between the environment and health, between the environment and the economy. If they did, they would see that the deterioration of the environment is a primary cause of our rising health costs and our declining economy. (Celente, p.132.)

A main thrust of Celente's book is to offer guidelines for identifying and tracking future system trends. However, in one chapter (pp. 115-134) on environmental deterioration he informs of the magnitude and ramifications of the ecological crisis that exists today, including the dumping of garbage and nonbiodegradable and industrial toxic waste, air pollution, routine emissions, water contamination, leaks and chemical spills, climate change, water shortage, acid rain, depletion of the ozone layer, and spraying of pesticides.

In regard to reverses and solving environmental problems, he believes it will grow out of public concern and action for the environment: "I don't have a lot of faith in our leaders. I believe that unless they're pressured by an informed, concerned, and aroused public, they'll continue to ignore the problems or give us only symptom relief. But I do have a lot of faith in people. I believe that if they can get information about the real world, they can make connections, and they can change policies." (Celente, p.132.)

He then outlines some restrictions, regulations, and laws that the local, state, and federal governments have been persuaded to make that have changed policies to make the earth more ecologically sound and also notes the importance of environmentally conscious shoppers to help improve the environment. He concludes the chapter with: "The answer (to reversing pollution problems) depends on all of us, as consumers, as voters, and as members of the global community." (p.134.)

The September/October, 1990, issue of the Yoga Journal focuses on how to be an envir-

onmentally aware consumer. Jennifer Sells (pp.46-49) describes nine handbooks that delineate scientific and political reasons for current environmental problems, and offer solutions to ecological problems. The environmental guides described suggest action that can be taken; offer practical, how-to approaches; provide numerous resources; and present enlightening information for improving the environment.

Emphasizing the importance of choosing the right products to help protect both our health and the environment, the lead article of this issue of Yoga Journal by Nell Bernstein (pp.42-45, 47-49) traces the development and career of writer/ecologist Debra Lynn Dadd, and shares Dadd's thoughts on actions that can be taken by environmentally aware consumers. A one-page criteria synopsis adapted from Dadd's new book is included. Evaluation criteria consider whether a product is safe for human use and the environment (earthwise). Listed criteria focus on the product's: ingredients, packaging, manufacturing, compassion to animals, and social responsibility of the manufacturer. Dadd's book is Nontoxic, Natural, and Earthwise: How to Protect Yourself and Your Family from Harmful Products and Live in Harmony with the Earth. Dadd, Debra Lynn. J.P. Tarcher, 1990.

Wellness in the Home

Create a happy home environment. Being happy increases your chances of wellness. Reduce stress. Set up an environment that is conducive to exercise. Exercise when it is most convenient for you and get cooperation from your family. Try to see that the whole family exercises (preferably together, when possible) and values fitness.

Information in chapter 10 applies to practicing good nutrition. In addition, purchase as many farm products labeled "organic" as you can. These foods are grown without pesticides or chemical fertilizers.

To promote a healthy home environment, prevent dryness by purchasing a humidifier. Either have one installed or a free standing one that is easy to clean. Promote a non-smoking environment. If you are interested in creating and maintaining a non-toxic home, read The Non-Toxic Home: Protecting Yourself and Your Family from Everyday Toxics and Health Hazards, by Debra Lynn Dadd (J.P. Tarcher, Inc., 1986). Chapters are included on how to discover if your home is toxic; on toxic and non-toxic products covering cleaning, household pesticides, tap water, drugs and medications, personal care, food, clothing, bedding, laundry, home office, hidden hazards, and tobacco smoke. Dadd also publishes a newsletter eight times a year on hazards and toxicity of commonly used products. ("The Earthwise Consumer," P.O. Box 1506, Mill Valley CA 94942).

An excellent chapter on chemicals and health is presented in The Well Adult (pp.124, 162; see abstract). It explains how chemicals can cause disease, lists dangerous chemicals targeted by EPA, and provides excellent charts on such things as occupations with higher than average cancer risks.

Rodale press has published a large volume of which a third (pp. 513-608) presents a year-long program of rejuvenation. It offers weekly, goal-oriented, step-by-step plans to rejuvenate mind and body through exercise, nutrition, and offers ideas for stress reduction and mental exercises. (Future Youth: How to Reverse the Aging Process, Rodale Press, Emmaus, PA, 1987).

The Columbia University School of Public Health's Complete Guide to Health and Well-

Being After 50, by Robert J. Weiss, M.D., and Genell J. Subak-Sharpe, (Editors), Time Books, 1988, provides helpful preventive advice on health and fitness, emotional well-being and relationships, and disease prevention. It offers health resources and describes how to use the health care systems.

Plan A Spa Day At Home. Put everyday activities on hold for a day of rejuvenation when possible--or even 1/2 day--to improve physical and mental fitness. Plan a day that may include some of the following:

Begin with exercise and stretch;
Eat three light, low calorie, healthy meals (at home or at a "laid back" restaurant);
Meditate;
Set high but reachable goals toward wellness;
Visualize reaching goals;
Walk or hike after lunch, taking a few minutes to stretch;
Read an inspiring article about wellness, self-improvement, or a good book, for example, The Selected Writings of Ralph Waldo Emerson.
Watch a video that will enhance your self-esteem.

Include in the day, if you want, something to improve your appearance, such as a facial, a make up lesson, or have your hair fixed. (See "Bolstering Personal Appearance--Skin and Hair" in the Appendix.) If you have been under lots of stress include a sauna or massage in the day. Make sure you include something that will bring you pleasure such as music you enjoy, an inspiring movie, a concert, or a play. Engage in new activities, like sailing, roller skating, and ice skating. This is your day.

Have simple, healthy foods on hand so you don't have to cook--fresh vegetables for salad, fruit, whole wheat rolls and bread, cold sliced roast turkey, fruit juices, low-fat granola, etc. I frequent a deli that has tasty HealthMark products, so I plan my spa meals around convenient, healthy items. If you like fresh carrot juice--a wonderful tonic for the skin, often served at spas--try to have some. Drink tap and mineral water throughout the day.

If you have the desire to visit a spa, but for some reason cannot, the owner and staff of Canyon Ranch Resort (Arizona) have documented their spa program in the book The Canyon Ranch Health and Fitness Program (Simon and Schuster, 1989). To help others improve the quality of their lives, information is included on nutrition, exercise, stress management, relaxation, posture, skin care, massage, sauna, herbs, menus, and recipes. Special programs are included on such techniques as how to improve posture, stop smoking, manage food habits, and get a fit mind. The book contains much useful information for those planning their "home spa day or week" and for those seeking a lifetime fitness program.

Wellness at Work

Mentally Tough (Loehr, James and Peter J. McLaughlin. M. Evans & Co., 1986) provides a lifetime approach for controlling stress and strategies for attaining an ideal performance state regardless of the circumstances.

Work at a job you enjoy and/or learn to make it pleasurable. Relish the process of work itself, because a good job cultivates satisfaction and good health, while job stress creates health hazards. When job stresses and pressures occur, learn to meditate and be sure to take time to exercise. Be interested in what you are doing, learn as much as you can on the job, and take courses to learn new technology and knowledge. This not only makes the job more interesting, but also

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makes an employee more valuable.

When possible, get up early, stretch, meditate, walk to work, or walk a few blocks to form a good mind set for work. If the office is dry and you find your sinuses amiss, buy a small humidifier. Work at a safe job, free from environmental hazards, if possible. If you are exposed to chemicals, learn their potential dangers, and take as many precautions on the job as you can. (See p. 170 for references.)

Eat a good breakfast before work in a calm, non-hurried atmosphere. If tempted to snack during the morning hours, carry food like bagels or fruit so you won't be tempted to eat donuts. Once you make eating breakfast a habit, you won't be hungry before lunch.

For adequate energy to carry you through a productive afternoon, eat a healthy lunch. Although the best lunch is usually one brought from home, when you do eat at a restaurant, eat light, for example, a salad with a small amount of dressing, bagels, etc. During the day, stay away from the junk food (high in fat and preservatives) and soft drink machines. If you find yourself craving junk foods, such as chips, bring healthier alternatives to work, such as Health Valley's corn curls or fruit.

Establish good and caring relationships with those you work, even if it is strictly business. Being a fair team member that can be trusted is important toward establishing good working environments.

Travel Wellness.

Here are a few tips for health when you are traveling:

Air Travel. When you arrange your travel, call ahead and arrange for a special low-fat meal. The cost is the same and you will feel much better when you arrive at your destination. The airlines have several alternatives, that include seafood platters, fruit platters, vegetarian, weight watchers, etc. Select a seat that allows you to stretch and move about every hour. When you get on the plane, grab a pillow to put in the small of your back so you can sit straight and avoid a backache. Drink water before and during the flight and avoid alcohol and caffeine (which dehydrate the body) and soft drink beverages. To combat the dry plane air on your face, use little make up and apply a rich moisturizer at home, and purchase a small bottle of mineral water to spray your face occasionally. Try to get to the airport early so that you are not rushed. Bring something good to read or do to engage your mind in an activity that you enjoy. Being focused makes travel time go quickly and more pleasurable. You can actually look forward to getting on the plane.

Two airports (Dallas/Fort Worth, and Phoenix Sky Harbor) have health clubs with full service gyms (opened by Air Vita Corporation) for those who want and have time for a workout. They expect to open another 18 fitness clubs at airports by 1991. (American Fitness, Nov/Dec., 1989, p.48).

Car Travel. Choose a reasonable driving distance per day. Stop and walk every couple of hours. Take your own healthy food and plenty of water.

At Your Destination. Traveling to a new destination doesn't rule out exercising. When you stay at a hotel, call before you leave home to ask about exercise facilities. Find out the kinds of programs are offered; i.e., aerobics classes, weight rooms, or both. When exercise facilities are not available, find out if there is a local YMCA, recreation center, or health club nearby you can use. Some hotels can deliver fitness equipment to your room, i.e., exercycles, rowing machines,

and fitness videos. If nothing is available, bring along an exercise video, jump rope, calisthenic routine, or plan to run, walk, or swim. If you run or walk, find a safe, pollution free area. Traveling women need to be aware that there are some areas where or times of day when it is not prudent to jog or walk in downtown areas of large cities and foreign cities. If you like to race, check to see if one is available the days you will be there, and if so sign up for the race.

Two books that list hotels and public exercise facilities in major U.S. cities are: The Traveler's Fitness / Health Directory, National Employee Services and Recreation Association, 2400 S. Downing Ave., Westchester, IL 60153 ($3.00), and Travel Fit: The Ultimate Guide to Where to Work Out While on the Road, Travel Fit Inc., 9089 Shell Road, Cincinnati, OH 45236 ($8.95 + $1.50 post.).

One of the first things I do when I'm in a new city, is to check the phone book under health. Listed in the yellow pages are not only health clubs (some of which have drop-in options) but also healthy food products. Listed are healthy markets as well as nutrition centers some of which serve light meals.

Spa Vacations

Many people are taking spa vacations as they begin to pay more attention to health and fitness in their life. There are many options to spa vacations, ranging from low to high cost. Plans are available for day, weekend, or weeklong stays. Spas offer a wide variation of packages which include educating participants concerning wellness so they will be able to practice it when returning home. In the past spas focused on improving the physical body and losing weight, offering exercise and diet programs. Now spas have branched out offering programs on self-improvement, mind-body, and other subjects.

If you're searching for a spa, Spa-Finders, Travel Arrangements, Ltd., a firm that suggests and makes reservations for spa vacations worldwide, can be reached at their New York office, 784 Broadway, New York, NY, 10036-4856. (1-800-475-1000). Spa-Finders also publishes a spa catalog and guide.

Longevity publishes an annual Spa Guide. The March, 1990, issue (pp. 51-62) reports on 29 spas--12 European, 11 American, and 6 located near natural mineral springs (also American). Some spas offer treatments for special health problems. The second annual Spa Guide (Longevity, March, 1991, pp. 30-44) chose 45 spas in the U. S., Canada, Caribbean, and Mexico. Choices are arranged into 15 categories, i.e., best fitness, anti-aging, weight loss, skin care, best on a budget, and so on. A one-page chart lists spas, price, telephone, and spa category.

Shape (March, 1991, pp. 68-73, 110-114) addresses evolution of spas over the years to now include safe and effective fitness programs at various levels, nutritionally sound and satisfying food, mind-body stress reduction programs, beauty treatments, and health education programs to build healthy habits at the spa and at home. The article also offers criteria for selecting a spa.

Over 100 American and European spas and medical and weight loss centers are excellently profiled in The Best Spas (Itallie, Theodore B., M.D. and Leila Hadley, Harper and Row, 1988). The book's purpose is to help readers choose a spa that's right for them. Information covers location, setting, ambiance, philosophy, services offered, a background and description of directors, programs offered, diet and weight management, beauty and grooming treatments, exercise facilities, accommodations, what to bring, whether documentation from your physician is required, fees and method of payment,

address and telephone number, length of stay required, and much more!

The Ultimate Spa Book (Sarnoff, Pam, Warner Books, Nov. 1989) analyzes spa resorts, reporting on advantages and disadvantages of each.

It is possible to plan a spa-like vacation yourself. Find a hotel that offers swimming, has appropriate exercise facilities, and carefully plan activities such as those listed under "planning a spa day."

SUSTAINED HEALTH EDUCATION

Subscribe to Prevention, American Health, Shape, and other magazines and newsletters to stay current on research and practices in wellness. (See pp. 212-214.)

PREVENTION AND HIGH LEVEL WELLNESS

Reiterating the importance of prevention, Mark notes: "Medicine has come far in the last few decades in the treatment of disease, but the greatest progress in improving the quality of life is in the area of preventive medicine. Looking back decades from now, medical historians will probably say that our time was remarkable for being the first time in history when large numbers of people discovered the benefits of regular exercise and good nutrition. Improved technology certainly gives us hope that many of the diseases to which we now succumb, like cancer, can eventually be cured. But we also know already that certain cancers (lung cancer, for example) are easily avoidable through simple preventive measures (not smoking)." (Mark, p.202.)

Prevention predicts that in the year 2000 "anticipated gains in longevity and quality of life will be the result of prevention." They quote Louis Sullivan, M.D., U.S. Secretary of Health and Human Services, who said "Ultimately, we will be healthier, not because of new drugs or surgical techniques, but because of the things we will do for ourselves." (Prevention, Jan. 1990, pp. 33-51--a special report.)

"The way you live accounts in large part for how long you live and how well you live." (The Athlete Within, Simon and Levisohn, p. x.)

The chance of living a quality life, free from disability, is enhanced through a wellness lifestyle. You can begin this quest for prevention and high level wellness now. I admire those who have made this decision and wish you luck and, more important, **good health!**

In summary....

....to start changing your lifestyle:

- You must be motivated to make a commitment to wellness.
- Next, you must take action:

  Assess your fitness level;
  Set goals;
  Choose an exercise activity that you like, is convenient, suited to your skills, at your ability level, and conducive to your life;
  Devise a specific plan;
  Exercise consistently...and stick with it;
  Eat nutritious meals (low in fat, cholesterol, sodium, and sugar...and high in complex carbohydrates and fiber);
  Lose weight gradually (if you need to) by combining nutritious eating with exercise;
  Practice healthy habits on p. 168.
  Self-motivate and reward yourself.

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- o Then, evaluate and measure your progress, and set new goals based on your evaluation.

- o Last, keep progressing and realize that fitness will keep unfolding for you.

Millman notes: "Your life is something you create, moment by moment. You are ultimately responsible for where you are, who you're with, and what you're doing. Like a painting, a sculpture, or a pottery bowl, you can create something fine and useful with your life, or you can throw it away. You have the power to make a life of great quality, or to ruin it. Most of us, fearing failure and not fully aware of our mortality, surrender all too soon to a second-rate (at best) way of life." (Millman, The Warrior Athlete, p.165.)

Changing your lifestyle is a life-long process. Each day is a gift. Enjoy!

YOU CAN DO IT!

BOOK BIBLIOGRAPHY

Aerobics, Theory and Practice. Aerobics and Fitness Association of America, 1985.

American College of Sports Medicine: Health/Fitness Instructor Workshop/Certification Reference Guide. American College of Sports Medicine, 1987.

ACSM Position Stand. "The Recommended Quantity and Quality of Exercise for Developing and Maintaining Cardiorespiratory and Muscular Fitness in Healthy Adults." In: Medicine and Science in Sports and Exercise, V.22, No.2, April, 1990, pp.265-274.

_____. Guidelines for Exercise Testing and Prescription. (Fourth Edition). Lea and Febiger, 1991.

Bailey, Covert. Fit or Fat. Houghton Mifflin Co., 1977.

Borysenko, Joan. Minding the Body, Mending the Mind. Bantam, 1987.

Bouchard, Claude, et al. Exercise, Fitness, and Health: A Consensus of Current Knowledge. Human Kinetics Books, 1990.

Bray, George A. "The Role of Weight Control in Health Promotion and Disease Prevention." In: Behavioral Health: A Handbook of Health Enhancement and Disease Prevention. John Wiley and Sons, 1984, pp.632-656.

Brody, Jane. Jane Brody's Nutrition Book, A Lifetime Guide to Eating for Better Health and Weight Control. Bantam Books, 1982.

Cailliet, Rene, M.D. and Leonard Gross. The Rejuvenation Strategy: A Complete Program for Everyone 35 and Over. Pocket Books, Simon and Schuster, 1987.

Canyon Ranch Staff. The Canyon Ranch Health and Fitness Program. Simon and Schuster, 1989.

Celente, Gerald and Tom Milton. Trend Tracking: The System to Profit from Today's Trends. John Wiley and Sons, 1990.

Coleman, Ellen. Eating for Endurance. Bull, 1988.

Connor, Sonja L. and William E. Connor. The New American Diet. Simon and Schuster, 1986.

Cooper, Kenneth H. The Aerobics Program for Total Well-Being. Bantam Books, 1982.

Cooper, Robert. Health and Fitness Excellence: The Scientific Action Plan. Houghton Mifflin, 1989.

Dreher, Henry. Your Defense Against Cancer: The Complete Guide to Cancer Prevention. Harper and Row, 1988.

Fox, Edward L. Sports Physiology. CBS College Publishing, 1984.

Francis, Peter and Lorna, Ph.D. If It Hurts, Don't Do It. Prima Publishers, 1988.

Future Youth: How to Reverse the Aging Process. Rodale Press, 1987.

Garrick, James G., M.D. and Peter Radetsky, Ph.D. Be Your Own Personal Trainer. Crown, 1989.

Gittleman, Ann Louise. Beyond Pritikin. Bantam Books, 1988.

Glanze, Walter D., Ed., Kenneth Anderson, Ed., and Lois E. Anderson. The Mosby Medical Encyclopaedia. New American Library, 1985.

Gleser, Robert A. The HealthMark Program for Life. McGraw-Hill, 1988.

Golding, Lawrence A., Ph.D., Ed., and others. Y's Way to Physical Fitness. The Complete Guide to Fitness Testing and Instruction. Third Edition. Human Kinetics, 1989.

Goor, Ron. Eater's Choice. Houghton Mifflin Co., 1987.

Hanna, Thomas. Somatics. Addison-Wesley, 1988.

Haskell, William L. "Coronary Heart Disease." In: Exercise Testing and Exercise Prescription for Special Cases. Theoretical Basis and Clinical Application. James S. Skinner. Lea & Febiger, 1987, pp. 203-224.

Hellerstein, Herman, M.D. and Paul Perry. Healing Your Heart. Simon and Schuster, 1990.

Howley, E.T. and B.D. Franks. Health/Fitness Instructor's Handbook. Human Kinetics Publishers, 1986.

Iyengar, B. K. S. Light on Yoga. (Revised Edition), Schocken Books, 1979.

Jerome, John. Staying Supple. Bantam Books, 1987.

Kabat-Zinn, Jon. Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness. Delacorte, 1990.

Kusinitz, Ivan and Morton Fine. Your Guide to Getting Fit. Mayfield Publishing Co., 1987.

Loehr, James E. and Peter J. McLaughlin. Mentally Tough: The Principles of Winning at Sports Applied to Winning in Business. M. Evans and Co., 1986.

Mark, Vernon, M.D., F.A.C.S. with Jeffrey P. Mark, M.Sc. Brain Power: A Neurosurgeon's Complete Program to Maintain and Enhance Brain Fitness Throughout Your Life. Houghton Mifflin, 1989.

Masironi, R. Ed. and H. Denolin, Ed. Physical Activity in Disease Prevention and Treatment. A WHO/ISFC Monograph. Piccin/Butterworths, 1985.

McArdle, William D., Frank I. Katch, and Victor L. Katch. Exercise Physiology: Energy, Nutrition, and Human Performance. (Second Edition.) Lea and Febiger, 1986.

Miller, Henry S., Jr., and Deborah Morley. "Low Functional Capacity." In: Exercise Testing and Exercise Prescription for Special Cases. Theoretical Basis and Clinical Application. James S. Skinner. Lea & Febiger, 1987, pp. 281-290.

Millman, Dan. The Warrior Athlete: Body, Mind, & Spirit. Self-Transformation Through Total Training. Stillpoint Publishing, 1979.

Mindell, Earl. Earl Mindell's New and Revised Vitamin Bible. How the Right Vitamins and Nutrient Supplements Can Help Turn Your Life Around. Warner Books, 1985.

Mirkin, Gabe,. M.D., and Marshal Hoffman. The Sports Medicine Book. Little, Brown, & Co., 1978.

Nieman, David C. The Sports Medicine Fitness Course. Bell Publishing Co., 1986.

Ornish, Dean. Dr. Dean Ornish's Program for Reversing Heart Disease. Random House, 1990.

Ornstein, Robert E. and Paul Ehrlich. New World, New Mind. Doubleday, 1989.

Pipes, Thomas V. and Paul A. Vodak. The Pipes Fitness Test and Prescription. Tarcher, 1978.

Pritikin, Nathan. Diet for Runners. Simon and Schuster, 1985.

Pritikin, Robert. The New Pritikin Program: The Easy and Delicious Way to Shed Fat, Lower Your Cholesterol, and Stay Fit. Simon and Schuster, 1990.

Ribisl, Paul M. "Developing an Exercise Prescription for Health." In: Behavioral Health: A Handbook of Health Enhancement and Disease Prevention. John Wiley and Sons, 1984, pp.448-466.

Samuels, Mike and Nancy Samuels. The Well Adult: The Complete Guide to Protecting and Improving Your Health. Summit Books, 1988.

Sharkey, Brian J. Physiology of Fitness. (Third Edition), Human Kinetics Publishers, 1990.

Shephard, R. J. "The Costs and Benefits of Exercise: An Industrial Perspective," pp. 189-204, in Fitness for the Aged, Disabled, and Industrial Worker. International Series on Sports Sciences, V.20. Human Kinetics, 1990.

Simon, Harvey B., M.D. and Steven R. Levisohn, M.D. The Athlete Within: A Personal Guide to Total Fitness. Little, Brown, and Co., 1987.

Smith, Everett L. "Special Considerations in Developing Exercise Programs for the Older Adult." In: Behavioral Health: A Handbook of Health Enhancement and Disease Prevention. John Wiley and Sons, 1984.

Smith, Lendon, M.D. Feed Yourself Right. McGraw-Hill Book Co., 1983.

Turock, Art. Getting Physical: How to Stick with Your Exercise Program. Doubleday, 1988.

U. S. Department of Agriculture. Nutrition and Your Health--Dietary Guidelines for Americans. Home and Garden Bulletin No. 232. U.S. Government Printing Office, February, 1980.

Weil, Andrew, M.D. Natural Health, Natural Medicine: A Comprehensive Manual for Wellness and Self-Care. Houghton Mifflin Co., 1990.

Wilmore, Jack H. Sensible Fitness. 2nd Edition. Leisure Press, 1986.

Zuti, William B. The Official YMCA Fitness Program. YMCA, National Board, 1984.

ADDITIONAL BOOK RESOURCES

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Alter, Judy. Stretch and Strengthen. Houghton Mifflin, 1986.

Alter, Michael. Science of Stretching. Human Kinetics Books, 1988.

Anderson, Nancy. Work with Passion. How to Do What You Love for a Living. Carroll and Grof Publishers, 1984.

Begoun, Paula. Blue Eyeshadow Should Still Be Illegal: The World After Retin-A. Beginning Press, 1988.

Brown, Ellen. The Gourmet Gazelle Cookbook. Bantam, 1989.

Columbia University School of Public Health. Complete Guide to Health and Wellbeing After 50. (Editors: Robert J. Weiss, M.D. and Genell J. Subak-Sharpe.) Time Books, 1988.

Cooper, Kenneth H. Controlling Cholesterol. (Dr. Kenneth H. Cooper's Preventive Medicine Program.) Bantam Books, 1988.

Dadd, Debra Lynn. Nontoxic, Natural, and Earthwise: How to Protect Yourself and Your Family from Harmful Products and Live in Harmony with the Earth. J. P. Tarcher, Inc., 1990.

_____. The Non-Toxic Home: Protecting Yourself and Your Family from Everyday Toxics and Health Hazards. J. P. Tarcher, Inc., 1986.

Evans, William, Ph.D. and others. Biomarkers: Determinants of Aging You Can Control. Simon and Schuster, 1991.

Griffith, H. Winter, M.D. The Complete Guide to Vitamins, Minerals, and Supplements. Fisher Books, 1988.

_____. Complete Guide to Sports Injuries: How to Treat Fractures, Bruises, Sprains, Strains, Dislocations, Head Injuries. The Body Press, 1986.

Heaney, Robert P., M.D. Calcium and Common Sense. Doubleday, 1988.

Itallie, Theodore B., M.D. and Leila Hadley. The Best Spas. Harper & Row, 1988.

Jerome, John. Staying With It. Viking Press, 1982.

Kowalski, Robert E. The 8-week Cholesterol Cure Cookbook: More Than 200 Delicious Recipes Featuring the Foods Proven to Lower Cholesterol. Harper & Row, 1989.

Kraus, Barbara. The Barbara Kraus Cholesterol Counter. Perigee, 1985.

Luby, Sue. Body Sense. Faber and Faber, 1986.

Millman, Dan. The Way of the Peaceful Warrior. H. J. Kramer, Inc., 1980.

Mindell, Earl. Unsafe At Any Meal. Warner Books, 1987.

National Employee Services and Recreation Association. The Traveler's Fitness/Health Directory. NESRA, 2400 So. Downing Ave., Westchester, IL 60153.

Netzer, Corrine T. The Complete Book of Food Counts. Dell, 1988.

Pearl, Bill Getting Stronger: Sports Training, General Conditioning, Body-Building, Weight Training for Men and Women. Shelter Publishing, 1986.

Powell, Don R. A Year of Healthy Hints: 365 Practical Ways to Feel Better and Live Longer. Rodale Press, 1990.

Rechelbacher, Horst. Rejuvenation: A Wellness Guide for Women and Men. Thorsons Publishers, 1987.

Ritter, Merrill A., M.D. and Marjorie J. Albohm. Your Injury: A Common Sense Guide to Sports Injuries. Benchmark Press, Inc., 1987.

Rodale Press. Future Youth: How to Reverse the Aging Process. Rodale Press, Emmaus, PA, 1987.

Sarnoff, Pam. The Ultimate Spa. Warner Books, 1989.

Schimer, Porter. Fitness Through Pleasure: A Guide to Superior Health for People Who Like to Have A Good Time. Rodale Press, 1982.

Simmons, Richard. Reach for Fitness: A Special Book of Exercises for the Physically Challenged. Warner Books, 1986.

Sinetar, Marsha. Do What You Love, the Money Will Follow: Discovering Your Right Livelihood. Dell, 1987.

Tobias, Maxine and Mary Stewart. Stretch and Relax. The Body Press, 1985.

Travel Fit, Inc. Travel Fit: The Ultimate Guide to Where to Work Out While on the Road. Travel Fit, Inc., 9089 Shell Road, Cincinnati, OH 45236.

Weider, Joe. Joe Weider's Weight Training for Sports. Sterling Publishing, 1985.

Winett, Richard A. The Ageless Athlete. Contemporary Books, 1988.

APPENDICES

FOUR PROFESSIONAL ASSOCIATIONS OFFERING CERTIFICATION PROGRAMS FOR THOSE IN THE HEALTH & FITNESS FIELD

AMERICAN COLLEGE OF SPORTS MEDICINE

American College of Sports Medicine (ACSM) is a nonprofit organization whose members are involved in research, education, and dissemination in the scientific study of health and fitness. Their mission is "to generate and disseminate knowledge and research concerning the motivation, responses, adaptations, and health aspects of persons engaged in sport and exercise." Among their many activities, they publish scientific and educational information, as well as offer professional certification programs to individuals involved in preventive and rehabilitative exercise programs.

AEROBICS AND FITNESS ASSOCIATION OF AMERICAN

The Aerobics and Fitness Association of American (AFAA) promotes safety and excellence in exercise instruction through various educational programs, and certifications, for fitness instructors and health professionals.

INSTITUTE FOR AEROBICS RESEARCH

The Institute for Aerobics Research (IAR), a nonprofit organization, was founded by Kenneth Cooper. The Institute certifies and trains fitness professionals in leadership and program implementation skills. Activities at the Aerobics Center include preventive medical examinations; research and studies on the role of exercise in health; and sponsorship of conferences, workshops, and symposia.

INTERNATIONAL DANCE EXERCISE ASSOCIATION and THE AMERICAN COUNCIL ON EXERCISE

The International Dance Exercise Association (IDEA) is a professional organization offering membership benefits that include a subscription to IDEA Today, conventions, liability insurance, and educational materials.

The American Council on Exercise (ACE) was, before 1991, called the IDEA Foundation. ACE is a fitness instruction certifying organization dedicated to providing consumer education, supporting research, and promoting quality education programs.

CUSTOMER SERVICE OF MAGAZINES REFERENCED IN THIS BOOK

(For copy requests and reader service, be sure to include the desired article page number(s) and specify how you want the material shipped.

AMERICAN FITNESS Aerobics and Fitness Association of America, 15250 Ventura Blvd., Suite 310, Sherman Oaks, CA 91430. (818-905-0040) ($1.50 per article.)

AMERICAN HEALTH Reader Requests, 80 5th Ave, Fl.14, New York NY 10011 (212-242-2460)

CHANGING TIMES Photocopy and reprint services: 1729 H Street, N.W., Washington, DC 20006. (800-544-0155; 202-887-6532)

CONSUMER REPORTS Reprints, Information Service: Consumer Union, 256 Washington, Street, Mount Vernon, NY 10553. (914-667-9400)

IDEA TODAY (Formerly titled Dance Exercise Today). Resource Center: 6190 Cornerstone Court East, Suite 204, San Diego, CA 92121. (619-535-8979) ($2.00 per article.)

LONGEVITY (Photocopies not available.) Back issues available from: Back Issues, Longevity, 200 N. 12th Street, Newark, NJ 07010. (Takes 6-8 weeks for delivery; cost $4.00.)

PREVENTION Photocopy and reprint service provided *to subscribers only*. 33 East Minor Street., Emmaus, PA 18098. (215-967-5171)

SHAPE 21100 Erwin Street, Woodland Hills, CA 91367. Attn: Back issues ($2.00 per reprint article; $4.00 for back issues.) (818-884-6800) Tollfree (800-423-5590)

INTRODUCTION TO BOOK ABSTRACTS

Many excellent books on fitness and health are available on today's market. I wrote descriptive abstracts on 20 selected books---a sample of helpful books---all of which provide well-founded information for planning and implementing a healthy lifestyle. These publications are timely, up-to-date, accurate, and give readers practical information for putting together a balanced, wholistic fitness program which will lead to a quality lifestyle.

Abstracts are arranged under the following topics: Fitness and Health Program books, Stretching, Nutrition, Prevention, Motivation, Weight Loss, and Stress. Categories overlap, as you might expect. For example, books by Gleser and Pritikin were placed under the Nutrition category because that is a major focus of their programs, but they could have been under Fitness and Health Programs, since both emphasize the importance of and include information for leading a healthy lifestyle.

Fitness Unfolding refers to many books which I did not abstract. I did not believe it practical to write abstracts for every referenced book. However, in the chapters I tried to include enough information on contents of these other books and provide availability references to help lead you to them. With the abundance of materials available in bookstores and libraries, I encourage you to expand your fitness knowledge by seeking out new information on your own.

The following chart "checklists" the contents covered in each book. If an item is checked, the category listed is adequately covered in the book.

ABSTRACTS OF SELECTED REFERENCE BOOKS

	Training Principles	Physiology	Exercise Plans	Step-by-Step Programming	Techniques (ie, Warmup..)	Fitness Testing	Weight Control	Health Benefits	Nutrition	Stress Control	Prevention & Wellness	Special Features, Recipes..	Worksheets & Logs (fill in)	Illustrations, Charts, Graphs	Bibliography & Reference	Index
Fitness & Health Prog																
Cooper, K.	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Cooper, R.	X	X	X	X	X		X	X	X	X	X	X		X	X	X
Hellerstein	X		X	X	X		X	X	X		X	X	X	X	X	X
Kusinitz/Fine	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Sharkey	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X
Simon	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Wilmore	X	X	X		X	X		X	X		X	X		X	X	X
Stretch																
Anderson					X						X			X	X	X
Jerome	X	X	X	X	X			X			X			X		
Nutrition																
Bailey	X	X	X	X	X	X	X	X	X		X	X	X	X		
Brody							X	X	X		X	X		X	X	X
Connor							X	X	X		X	X		X		
Gleser	X		X	X	X		X	X	X	X	X	X	X	X	X	X
Pritikin, R.	X		X	X	X		X	X	X	X	X	X		X	X	X
Motivation																
Turock			X	X			X	X		X	X	X	X	X		
Prevention																
Mindell							X		X	X	X	X	X	X	X	X
Samuels	X	X	X		X		X	X	X	X	X	X	X	X	X	X
Weil	X						X	X	X	X	X	X		X	X	X
Weight Loss																
Shape, '88			X	X			X		X					X		
Stress																
Borysenko										X	X	X	X	X	X	X

TITLE: The Aerobics Program for Total Well-Being.
AUTHOR: Cooper, Kenneth H.
PUBDATE: 1982
PUBLISHER: Bantam Books

Part I (chapters 1-2) discusses three steps to well-being---aerobic exercise, proper nutrition, and emotional balance---and traces the author's personal involvement in developing a balanced exercise program. Part II (chapters 3-5) emphasizes the nutrition factor in total well-being. Chapter 3 offers basic principles for a healthy diet, which include: (1) the sources of calories by percentages should be 50% from carbohydrates, 20% from protein, and not more than 30% from fat; (2) eat regularly and don't starve yourself; (3) distribute calories throughout the day (25% breakfast, 50% lunch, 25% dinner); (4) exercise at the end of the day to lose weight; (5) recognize the hazards of obesity; (6) maintain ideal weight; and (7) establish a positive eating plan (sample menu plans are included). Cholesterol is the focus of chapter 4 which presents a three-step plan to lower cholesterol, through diet, exercise, and avoiding practices which lower high density lipoprotein cholesterol. Supplements, "superfoods", and super advertising are covered in chapter 5. Part III (chapters 6-8) deals with exercise. Chapter 6 discusses specific benefits of aerobic exercise and what aerobic exercise is all about, while chapter 7 shares the secret of enjoying exercise--choosing an aerobic activity you are interested in staying with for at least six weeks. It presents four steps involved in tailoring a program for your particular needs--assessing health status, determining heart rate, choosing a program, and incorporating four essential components in your fitness program. Chapter 8 gives a step-by-step lifetime age-adjusted exercise plan based on an aerobic point system. For each activity, a number of points (based on the energy cost of each activity) are awarded. Exercise plans are included for over 20 different activities for healthy individuals, as well as plans for the obese and cardiac patients to be used ONLY with a physician's approval. Part IV (chapters 9-11) discusses the emotional factor in total well-being, explaining the psychological advantages of aerobic exercise which include improved self concept, feelings of well-being, and ability to handle stress. Part V (chapters 12-13) deals with other things to do to maintain a healthful balance. Chapter 12 emphasizes the importance of having regular medical exams, and presents 22 phases of a complete medical exam that can be used as a check list to make sure you are getting the best examination. The last chapter discusses three things that accelerate aging--cigarette smoking, inactivity, and obesity. A short section concludes that practicing total well-being is a lifetime venture. Appendices contain a number of charts too lengthy to list. Point system charts for various types of aerobic exercises during a number of minutes are included in the appendix.

COMMENTS: This book is a classic which has sound, practical information, even though it was written in 1982. The preventive and wholistic approach, emphasized throughout the entire book, is valuable and relevant. The point system is an effective way for measuring and monitoring workouts, and also promotes motivation.

TITLE: Health & Fitness Excellence: The Scientific Action Plan.
AUTHOR: Cooper, Robert K., Ph.D.
PUBDATE: 1989
PUBLISHER: Houghton Mifflin Company

Offering a wholistic approach to wellness, the book provides a medically sound healthy lifestyle program to help people think, feel, and perform at their best. The 47 chapters are arranged under one of seven key steps to health and fitness. Each section complements the others and begins with popular misconceptions counteracted by facts to dispute the myths.

Step one, Stress Strategies, includes information and techniques for controlling thoughts, energy, and emotions, and for improving and maintaining relationships. Step two, Exercise Options, presents guidelines for aerobic exercise, proper breathing, flexibility, strength and endurance, balance, agility, and coordination. Step three, Nutritional Wellness, outlines eight scientific nutritional principles for designing a superior diet that consists of eating five or six light, healthy meals a day which will result in burning body fat and better functioning. Other topics deal with the mind/mood/food connection, fresh and non-contaminated food, eating out, and vitamin and mineral supplementation. Step four, Body Fat Control, discusses why fad diets don't work, exercises and nutritional priorities that foster weight loss, and the need to drink water. Step five, Postural Vitality, discloses techniques for improving posture. Step six, Rejuvenation and Living Environments Design, tells how to develop the senses to help build brain power and slow aging, and offers ways to protect yourself and control outdoor and indoor pollution problems. Step seven, Unlimited Mind and Life Unity, focuses on positive thinking and good moods. Included are ways to sharpen concentration and creativity, steps for improving mental images that help you relax, boost your body's immune power and achieve goals, and techniques for developing the brain/mind at any age. The last chapter deals with the topic of the importance of life unity which encompasses meaningful living, love, sense of community, spiritual wellness, global consciousness, and local action. The book concludes with a list of resources and references and is indexed.

COMMENTS: The book offers a preventative/wholistic approach that encompasses information not always included in a fitness book--for example, the chapter on the importance of good posture along with techniques for improving posture. Throughout the book practical activities help the reader discover such things as how to manage stress. Useful information is included on topics readers want to know about; i.e., pros/cons of margarine and problems with hydrogenated fats, ways to nurture your hidden talents and inner healing. Some exercises are given to build strength and endurance and for balance, agility, and coordination. The well-organized book is written in a straightforward manner.

TITLE: Healing Your Heart. A Proven Program for Reversing Heart Disease without Drugs or Surgery.
AUTHORS: Hellerstein, Herman, M.D. and Paul Perry.
PUBLISHER: Simon and Schuster.
DATE: 1990.

The book is based on the author's clinical observations and research, and on other research projects, showing that heart disease can be reversed by eating a healthy diet, exercising, and following other heart-healthy habits. How to implement and maintain the program, and how to alter lifestyle factors that contribute to heart disease are dealt with. It is intended for the millions of Americans who want to prevent, are at risk for, or suffer from heart disease.

Nine chapters (Part I) explain what knowledge is needed to get started on a heart-healthy way of life. Chapter One discusses seven decades of research which shows that heart disease can be reversed. Seven goals of the program are presented in Chapter Two: maintaining a low blood serum cholesterol level; normal blood pressure, body weight, and blood-sugar level; controlling stress; exercising; and not smoking. This chapter also identifies risk factors for heart disease, tells when reversal can be expected to take place, describes the seven goals, and shows how each goal contributes to reversal of heart disease. Then, how to examine one's lifestyle to see how it fits with the recommended program and what habits need to be changed are addressed in Chapter Three. Guidelines for reducing dietary fat and cholesterol are given in Chapter Four. Chapter Five deals with the need to include fiber and fish in a diet, noting that research shows that high fiber and fish diets are responsible for lowering cholesterol levels and for lower rates of heart disease. Strategies and tips for eating out at restaurants (fast foods, ethnic, and other restaurants) are provided in Chapter Six. Chapter Seven discusses the benefits of exercise and explains how it improves the cardiovascular system; presents recommendations for the type of activity and frequency, intensity, and duration needed to show fitness improvement; and offers suggestions for exercise adherence. Chapter Eight deals with the proper balance of vitamins and minerals needed for a healthy heart. Chapter Nine provides the reversal diet menu suggestions for a week.

In Part II, 60 low-fat, low-cholesterol recipes and zero-cholesterol foods (brand name, commercially prepared products) are listed. A bibliography and index are included. Forms and worksheets to fill out are provided. (For example, sheets for recording diet and exercise habits.) Also included are tables of the nutritive value of American foods, and a few charts.

COMMENTS: The heart disease reversal program, based on extensive research studies, is sound. Well-organized, this book is written in simple terms that a layman can understand and use to easily put the program into practice. Although the program addresses itself to reversal of heart disease, it also reduces the risk of other degenerative diseases caused by the American diet. The diet is not strictly vegetarian. It includes some fish and chicken. Recommended diet is low fat (American Heart Association guidelines) and low sodium, and high in fiber and complex carbohydrates.

TITLE: Your Guide to Getting Fit.
AUTHORS: Kusinitz, Ivan and Morton Fine
PUBDATE: 1987
PUBLISHER: Mayfield Publishing Company, Palo Alto, California

Guidelines and information help college level-adults design and implement a personal fitness program. The book is organized into 14 chapters. Chapter one explains the components of fitness and how to assess your fitness level; chapter two introduces training principles that are the foundation of an exercise program. The next three chapters discuss the five components of fitness: cardiorespiratory endurance, body composition, muscular strength, muscular endurance, and flexibility. Chapter six deals with eating right. Chapter seven offers model exercise programs designed for students at any level of fitness: walking/jogging/running, interval circuit training, calisthenic circuit training, stretching, bicycling, rope skipping, swimming, weight training, and home exercise circuits. Chapter eight and Appendix B list and evaluate more than 50 sports and activities. Chapter nine consists of a weight control program. Chapters 10-13 deal with special issues: managing stress; choosing a fitness facility; and programs for special needs--hypertension, diabetes, orthopedic problems, and pregnancy; and answering common training questions. Chapter 14 provides step-by-step methods to begin and maintain an individualized fitness program; topics focus on selecting a sport or activity, and recording and assessing your progress. Three appendices list desirable weights for men and women, sports and activities, and a food exchange plan. The book contains a number of special features such as individual worksheets. Illustrations, charts, and graphs are included and the book is indexed.

COMMENTS: The book provides excellent guidelines and information presented in clear and non-technical language for helping all adults to develop a personalized fitness program. The information included provides a good foundation for developing a program. Readers take an active approach to beginning and designing their program, completing work sheets, logs, and so on. The involvement aspect serves as a motivation factor and allows for progress evaluation. The model exercise programs are sound and easy to follow.

TITLE: Physiology of Fitness. 3rd Edition.
AUTHOR: Sharkey, Brian J., PhD
PUBDATE: 1990
PUBLISHER: Human Kinetics Publishers, Inc.

The book provides guidelines for developing practical, individualized fitness programs, as well as presents information for understanding the physiological aspects of fitness. It is divided into an introduction, five major parts, and subdivided into 16 chapters, each of which begins with a list of major objectives for the material covered.

The introduction discusses the components of fitness; relationships between fitness, health, and wellness; and tells how to generally assess your level of fitness. Parts one and two deal with understanding of and training effects (benefits) of both aerobic and muscular fitness. These two parts also offer prescriptions for aerobic and muscular fitness, telling how to select and develop individualized programs. Fitness and weight control are the focus of part three which covers energy balance (food intake balanced with energy expenditure); the role that aerobic exercise plays in increasing the metabolic rate to help control weight; development of a sensible weight control program that incorporates exercise, diet, and behavior therapy; and fallacies, fads, and facts about weight control. Part four, fitness and health, presents information from a medical perspective. For example, it discusses when to get medical and pre-exercising examinations, what medical tests to have taken, and what is involved in medical testing; the role that fitness plays in maintaining good cardiovascular health; the psychology of fitness; and appropriate exercise under different environmental conditions (i.e., exercising in the heat, cold, high altitude...). Part five gives information for work, sport, and lifestyle describing how daily decisions influence health and quality of life. For example, it advises how to better integrate job and lifestyle and how to improve performance in a favorite sport.

Appendices include the following sections: the physiology of muscles, energy, and oxygen to help readers understand the more technical aspects presented in the book; aerobic and muscular fitness tests readers can take to determine fitness level and suggested exercise programs for improvement geared to beginning, intermediate or advanced levels; guidelines and tests for determining caloric intake, energy, and caloric expenditure and body composition; a test to assess current health status; and principles of training. Tables, charts, tests, graphs, figures, and illustrations are liberally included throughout the book to enrich text information. References and a glossary/index are provided.

COMMENTS: The book takes a more scholarly, textbook approach for those who want to fully comprehend the physiological aspects of fitness, as well as understand why and how to train for fitness. Offering sound information based on research, it includes all the information, advice, methods, and tips needed for developing a wholistic, individualized fitness program or for improving an existing program or for excelling in a sport. Because the book contains an abundance of good information on various topics, it would make an excellent reference book.

The many varied charts, tables, and illustrations nicely supplement the text material and clarify much information at a glance.

TITLE: The Athlete Within: A Personal Guide to Total Fitness.
AUTHORS: Simon, Harvey B., M.D., and Steven R. Levisohn, M.D.
PUBLISHER: Little, Brown, and Co.
PUBDATE: 1987

Information and techniques on exercise, nutrition, and stress management are presented to help readers understand optimal health and put this knowledge into practice by designing and implementing a personalized lifetime fitness program. Arranged into four major parts, each part builds on the other.

Part one focuses on the scientific and medical basis of fitness, covering four facets of fitness--cardiorespiratory and musculoskeletal (with good information on the physiology and anatomy of fitness), psychological, and nutritional. Self-assessment tests for the four facets of fitness conclude the chapters to help readers evaluate their strength and weakness to let them know their fitness level in each of the components.

Part two presents the tactics of fitness, giving practical exercise information, guidelines, and instructions (along with illustrations) for building a balanced, individualized exercise program. It includes a chapter that tells how to collaborate with a physician and what tests and procedures to request from a physician. It offers training information and techniques for promoting flexibility, aerobics, and strength (FACS), covering the aspects of training schedules, patterns, and principles for implementing and implementing a safe, effective, and medically based program.

Part Three deals with sports for fitness--"lifesports" (walking, jogging, running, swimming, rowing, aerobic dance, biking, cross-country skiing, and skating) and sports for fun and recreation--competitive team sports (racquet sports, basketball, soccer, and hockey). The authors emphasize that participants need to first get fit for sports; then, sports can bring them variety and stimulation, and can be used to maintain and improve fitness. "How tos" point out fitness demands and benefits and possible drawbacks for each sport, and describe each sport, equipment and clothing needed, ways to set goals and get started, safety precautions, possible injuries that may develop, and ways to get into competitive sports.

Part four on sports medicine, presents information on the prevention, recognition, and treatment of common athletic injuries.

An appendix lists books, centers, and professional organizations (with addresses) to contact for additional information.

COMMENTS: The book contains good information for planning and implementing a fitness program. It provides so much knowledge that it can be used as a reference book for those already in fitness, or for someone who is interested in adding competitive and team sports to their existing program. The medical information (part IV on sports medicine) is worth the cost of the book itself.

TITLE: Sensible Fitness. 2nd Edition.
AUTHOR: Wilmore, Jack H.
PUBDATE: 1986
PUBLISHER: Leisure Press, Box 5076, Champaign, IL. 61820

The book, arranged into three major parts, helps individuals plan a safe and effective lifetime exercise program. Part I addresses diseases and conditions which have been associated with physical inactivity--coronary artery disease, hypertension, obesity, anxiety and depression, lower back pain, arthritis, and osteoporosis. Then, the role that a more active lifestyle plays in relation to these diseases and conditions is described along with how mobility and exercise can contribute to health and longevity. Part II presents an exercise plan for fitness and sport, stressing the importance of an individualized approach to exercise. The author discusses the necessity of having a medical evaluation before beginning a program, deals with medical problems which preclude formal exercise, and outlines risks suggesting the need for a medically supervised exercise program. Presented next are appropriate warm-up, cool-down, and flexibility exercises; activities to promote cardiorespiratory fitness; information on training for strength and muscular endurance; and a discussion of the role of sport and recreational activities in the promotion of fitness and sport. Part III focuses on special considerations related to exercise and sport: understanding problems associated with and coping with the environment during exercise (specifically, heat, humidity, radiation, cold, altitude, and air pollution); differences in athletic performances of the sexes and in regard to age; proper nutrition for exercise and sport; injuries that result from exercise and prevention and treatment of injuries. Appendices include drawings with labels of the bones and muscles of the body and metric tables. The book provides references, lists of selected readings, and is indexed.

COMMENTS: The concisely written, well-organized book offers information for the general public about the role exercise plays in promoting health and preventing disease. It clearly and simply explains principles behind the prescription of exercise.

TITLE: Stretching.
AUTHOR: Anderson, Bob;
Illustrator: Anderson, Jean
DATE: 1980
PUBLISHER: Shelter Publications, Inc.

Approximately 400 illustrated exercises for stretching are presented in this comprehensive guide to stretching. The first few sections deal with who should stretch and why, when to stretch, how to stretch correctly, and how to get started.

A major part of the guide presents illustrated, different stretches for various muscles and body parts, with instructions for each position. (Throughout the book, illustrations include shaded sections of the muscles and body area being stretched). A two page guide precedes this section that gives reference to the page where each may be found in the book. Next, a short section provides stretching routines for dealing with muscular tension and tightness of everyday life (i.e., stretching for specific daily activities, routines for those over age 50, T.V., etc.).

Another major part of the book offers stretching routines to help prepare for 20 different sports and activities (such as basketball, cycling, martial arts, wresting, etc). Each routine has general stretches for the whole body, as well as specific stretches for the particular sport or activity.

The next section gives exercises for developing strength of abdominal muscles; arms and chest; ankles, toes, and lower legs; fingers, hands, wrists, and forearms. Specific instructions are given for bar dips, seat drops, chin-ups, and stairs.

Several short sections offer techniques for running, walking, and cycling; information on how to eat light and nutritious; and how to care for the back. The book ends with a summary of stretching exercises sketches for prescribing individual fitness and rehabilitation programs. Included are a bibliography and index.

COMMENTS: This well-organized and illustrated guide is a valuable resource for stretching that is easy to use and put into practice.

TITLE: Staying Supple
AUTHOR: John Jerome
DATE: 1987
PUBLISHER: Bantam Books, Inc.

Taking an essay approach (rather than the textbook avenue) to understanding the musculoskeletal system, the book emphasizes the important role stretching plays in keeping connective tissue healthy. Arranged into three major parts, Part I of the book discusses what, how, and why one should maintain suppleness. A wholistic approach points out that the body is a one-piece flexible unit, and this innerconnection needs to be considered in the way the body is used and in training programs. How to stretch is discussed, as well as presentations (along with illustrations) of stretching moves. Part II, offering technical information on the physiology of suppleness, describes components and composition of connective tissue and how connective tissue holds the body together. Muscle composition and structure is dealt with, along with how muscles make movement, and their capacity for delivering information to the brain is covered in some detail. The major topic of part III is loss of suppleness and how connective tissue is affected by aging, inactivity, and overuse, pointing out that muscle and connective tissue respond to these conditions by tightening and shrinking and that stretching is the most controllable tool for keeping connective tissue healthy. Briefly discussed in Part III are the practices that have been concerned with musculoskeletal health, such as yoga, t'ai Chi, proprioceptive neuromuscular facilitation, message, and rolfing. The last chapter stresses the importance of giving your connective tissue an appropriate level of use by doing things the easy way and getting physical details right--making your moves accurate and well timed, being properly aligned, and avoiding traumatic loading of connective tissue. A glossary concludes the book.

COMMENTS: Those who have discovered the wonderful way their body feels and behaves because of stretching will enjoy reading the book because it provides an understanding of the what, whys, and hows of stretching. Although the physiology section is complex, it demonstrates that proper stretching does produce physiological changes that result in healthy tissues. Those who have ignored the health benefits of stretching would be well advised to read the book and practice stretching. The book clearly shows that having supple connective tissue and being flexible is as important as the other components of fitness.

TITLES: (two books) Fit or Fat? The Fit or Fat Target Diet.
AUTHOR: Bailey, Covert
PUBDATE/PAGES: Fit or Fat? 1977; Target Diet, 1984.
PUBLISHER: Houghton Mifflin Company, Boston.

Bailey's three fitness books, including his recent book of recipes, offer a plan to health and fitness through nutrition and aerobic exercise.

In the first book, Fit or Fat?, comprising 29 brief chapters (from one to five pages), Bailey explains the relationship between physical activity, fat metabolism, and weight, emphasizing and showing how aerobic exercise changes and speeds up metabolism. He discusses why dieting without exercise doesn't work, explaining that the metabolism of fat people slows down when they diet and adapts to low-calorie intake; (i.e., their internal chemistry is efficient at storing fat and inefficient in burning it). How aerobic exercise increases muscle size, tones it, alters its chemistry, and increases its metabolic rate to burn almost all the calories eaten is discussed. Other topics covered include the meaning of aerobics, exercises that are and are not aerobic, the appropriate intensity for exercising, choosing an exercise, percent of fat level maximums for good health, body composition, whether to exercise when ill, spot reducing, weight lifting, and insensible exercise. The appendix presents offers a prescription for exercising, tells how to determine target heart rate (THR), lists aerobic exercise categories, and provides a 12-month log for the user to complete.

The Fit or Fat Target Diet book, containing 21 brief chapters, provides a framework for evaluating foods, diets, and menus to help the reader follow an ideal diet plan--a diet that is balanced and high in nutrients, low in fat and sugar, and high in fiber. Fats are viewed as the nutritional enemy in the American diet, contributing to obesity as well as other diseases--the golden rule is to eat less fat. The target diet concept consists of circles built around the four-food-groups, the center becoming the target. Foods farther away from the target center are higher in fat and sugar and lower in fiber. Fringe benefits of choosing foods toward the center of the target diet are that the food will also be low in cholesterol, in preservatives or additives and salt, high in nutrient density, less costly, and satisfying. Ways to eliminate fat from the diet are presented, and readers are told how to analyze the diet and presented with samples of eating plans--a healthy vegetarian meal; a typical high fat American diet; and a healthy, exemplary diet, low in fat but very filling. The reader is told how to use the target diet, modify a recipe, and how to lose weight. Discussed also are serving sizes; fiber; vitamin supplementation; salt; protein; and cholesterol, heart attack, and arterial disease. The appendix lists fat and fiber content of foods.

COMMENTS: Read both books, since the first focuses more on exercise and the second on nutrition. Although the first book was written in 1977, the information remains accurate and relevant. The books are good for those beginning exercise--they are easy to read, understand, and apply. The coverage is straightforward and broad and offers much information. The target approach offers the reader essential information that can be understood and assimilated quickly.

TITLE: Jane Brody's Nutrition Book. A Lifetime Guide to Eating for Better Health and Weight Control.
AUTHOR: Brody, Jane
DATE: 1982
PUBLISHER: Bantam Books, Inc.

Arranged into six major parts, the book covers essential topics on nutrition for a lifetime. Part one, containing six chapters, focuses on what to eat and deals with the following topics: new nutrition and the idea that "you are what you eat"; protein and how Americans eat more than the body needs; fats and the high fat American diet, cholesterol, and how to eat the low fat way; the importance of eating a diet high in complex carbohydrates; and sugar and how to cut down on it. Consisting of four chapters, part two discusses the non-caloric nutrients, such as fiber, vitamins, minerals, and salt. What to drink is the major concern of part three which presents four chapters on drinking water, coffee and tea, milk, and alcohol. Part four on weight control provides three chapters on obesity (how many calories do we need, how do we know we are overweight, and whether it is harmful); why diets don't work; and weight control which covers such topics as the importance of exercise in losing weight, slimming tips, and how to construct a weight-loss menu plan. Part five includes seven chapters which focus on food needs for certain times in our lives--pregnancy, infancy, children, adolescents, older adults, athletes, and vegetarians. The last part of the book consists of three chapters on additives, health foods, and labels. The appendix includes a few updates to the previous information.

COMMENTS: The author's guidelines take a moderate, intelligent approach to healthy eating over a lifetime. It is well indexed and after reading, is good to have around as a reference book when questions about nutrition and diet arise. It contains 26 tables and 15 charts which provide much information at a glance. Over 200 recipes for healthy eating and weight loss are also included throughout the text. Although written in 1982, it is a classic containing an enormous amount of information.

TITLE: The New American Diet.
AUTHOR: Connor, Sonja L., M.S., R.D. and William E. Connor, M.D.
PUBDATE: 1986
PUBLISHER: Simon and Schuster.

The healthy lifetime eating plan, based on the five-year Family Heart Study sponsored by the National Institutes of Health and supervised by the authors, promotes a diet high in carbohydrates (65% of total daily calories); high in fiber (45 to 60 grams daily); low in fat (20% of total daily caloric intake), low in sodium (1725 mg to 2415 mg daily); and low in sugar (10 to 14 teaspoons or 10% of total daily calories). Although a large amount of the diet comes from the vegetable group, it is not a vegetarian diet. The prevention diet reduces risk for heart disease, strokes, high blood pressure, cancer, diabetes, and other chronic diseases. To ensure behavior modification, the diet allows families to gradually change their eating habits over several years, progressing through three phases. Phase one emphasizes modification and substitution; phase two introduces new recipes, and phase three completes the new way of eating.

Arranged into three major parts, part one of the book discusses the need for a change in American eating habits to prevent chronic diseases. It also includes a quiz to help the reader evaluate current eating habits and then to compare them with the new diet. Part two details how to implement the diet in a household; describes the three-phases of progression; includes a chapter on weight loss and maintenance; discusses special situations that make dietary changes difficult (i.e., eating out, trips); and gives advice on medical tests to monitor progress. Part three, the cookbook, provides three hundred New American Diet recipes. Each of the three sections ends with questions to assess progress in maintaining the goals specified in the phase.

Special features include a good number of tips throughout the book--for example, lists of substitute and snack foods are given which includes product brand names, how to modify recipes is explained, and sample one-week meal plans are presented. The appendix lists the nutrient analysis of recipes.

COMMENTS: This is one of the best books I have seen on offering a quality plan for changing eating habits. It is based on experience--the authors note that over 80% of the 233 families who began the diet adhered to it, lowering their blood cholesterol levels and reducing their risk for disease. The nutrition information is accurate and sound--it encourages a variety and balance in food selection. Also, menus are nutritionally complete and include ethnic foods. Although most suggested low fat substitutes are natural, purists may object to some of the substitutes, for example, using partially "hydrogenated" peanut butters is viewed as ok.

TITLE: The HealthMark Program for Life.
AUTHOR: Gleser, Robert A., M.D.
PUBLISHER: McGraw-Hill Book Company
DATE: 1988

The purpose of the book is to present the HealthMark (HM) program--a nutrition, exercise, and stress reduction program that is easy to put into practice and adhere to over a lifetime. It shows how to make practical lifestyle changes to gain control over and improve the quality of health and reduce the risk of life-threatening disease. The HM Program promotes a low-fat and low-cholesterol diet, high fiber, and low sodium and sugar eating plan that tastes good and incorporates foods Americans like and are accustomed to eating. Other components of the program include exercising at the proper intensity (heart rate), frequency (4-6 days per week), and duration (35-45 minutes per session), and reducing stress to an acceptable level. HM recommendations are in line with the major nutritional principles of such medical groups as the American Heart Association, American Diabetes Association, American Cancer Society, and National Heart, Lung, & Blood Institute.

The book is arranged into nine chapters. Chapter one discusses risk factors for the leading causes of death--cardiovascular diseases, hypertension, diabetes mellitus, cancer, and osteoporosis--and explains how the HM program lifestyle helps to reduce risk factors and prevent diseases. Emphasizing the need for a medical examination, chapter one describes what tests to take and lists home tests. Chapter two focuses on the relationship between food and disease as it relates to cholesterol, explaining how atherosclerosis begins, the major risk health factors for coronary artery disease, cholesterol levels, LDL/HDL ratio, what causes blood cholesterol level to rise, and ways to lower cholesterol to reduce the risk for heart attack and reverse atherosclerosis. Chapter three, on fats in foods, offers ways to reduce fat intake, presents HM nutritional guidelines, and explains how fats affect cholesterol levels. Chapter four presents facts on protein, carbohydrates, vitamins, minerals, and supplements including sources, function, deficiency symptoms, and over use symptoms for vitamins and minerals. Chapter five tells how to make healthy nutritional choices by following ten general principles that include reducing fat, eating complex carbohydrates, eating 20-30 grams of fiber per day, drinking two glasses of skim milk per day, consuming no more than one teaspoon of salt a day, drinking no more than two alcoholic drinks per day, reducing consumption of food additives, and eating three meals per day. Tips for following the program include how to eat out and how to read labels. Six, on exercising, offers HM guidelines and techniques to follow when exercising. Chapter seven deals with stress awareness and self-management, defines stress, suggests ways to cope with stress, and offers a plan for reducing stress. Eight provides information on weight gain, discusses health risks of obesity, emphasizes the need to combine both diet and exercise in weight control, and presents a personalized eating plan. Nine deals with putting the HM program all together--showing how to plan your exercise, nutrition, and stress management and how to monitor your progress by implementing the HM point system to grade your exercise and nutrition lifestyle practices. Appendices include stretching exercises, an HM seven-day eating plan, and sample menus and recipes. The book is indexed.

COMMENTS: Easy to read, the book offers a wholistic, sound medical approach to good health. It contains much useful and practical information, i.e., lists many food additives, tells what they are, and describes their potential cancer risk; gives tips for modifying recipes; and presents tables on fat and salt content of fast foods, and tables of saturated fat content in meats and dairy products.

TITLE: The New Pritikin Program: The Easy and Delicious Way to Shed Fat, Lower Your Cholesterol, and Stay Fit.
AUTHOR: Pritikin, Robert.
PUBLISHER: Simon and Schuster
DATE: 1990

The foundation of the wholistic program is a flexible eating plan of unprocessed foods that are low in fat (10% of daily total calories), cholesterol (100 mgs or less), and sodium (1,600 mg or less) and high in complex carbohydrates, combined with an exercise and stress reduction plan. Arranged into three major parts, Part I focuses on how to attain fitness, health, and energy for a lifetime. It discusses how the Pritikin quality eating and sensible exercise and stress management plans address all health concerns including weight loss and risk of chronic disease to help you look and feel better, and live longer.

Part II presents crucial, up-to-date research and information on nutrition and health concerning fat, cholesterol, salt, protein, fiber, and carbohydrates and how each contributes or detracts from health and weight loss goals.

Addressing the new Pritikin diet, exercise, and stress-management program, Part III begins with a chapter on how to follow the principles presented in the book for adhering to the lifetime program. Next, foods are divided into three categories--"Go" foods which are healthful foods high in complex carbohydrates--grains, vegetables, fruits, and non-fat dairy; "Caution" foods which can be eaten in limited amounts when necessary such as sweeteners, unsalted nuts, polyunsaturated oils, low-fat dairy; and "Stop" foods which raise the risk of heart disease--unhealthy foods such as fatty meats, whole dairy, egg yolks, animal fats, tropical and hydrogenated oils. The diet plan uses a method called Exchange System. Foods are arranged into five groups consisting of complex carbohydrates, vegetables, fruit, dairy, and high protein. A certain number of daily servings from each group is recommended, making calorie counting unnecessary.

Other chapters describe the kinds of healthy foods to keep in the kitchen; present menus and recipes; offer suggestions for eating out and when traveling and during holidays and other special events.

The importance of starting and adhering to exercise is addressed, and people are advised to select activities that require simple skills and are convenient and enjoyable. Another chapter deals with stress management.

The last chapter tells how to make the Pritikin program permanent by keeping it SIMPLE; specifically, how to Self-motivate, Identify eating triggers; Make new choices; Plan ahead; Learn to reward efforts; and Engineer improvement for success.

COMMENTS:

The book provides a wholistic, healthy lifetime program that is flexible, easy to put into practice, and maintain. For the person who wants to be in excellent health, the nutrition plan is one of the best, if not the best. Critics say most people can't adhere to a plan that allows only 10% fat, but Pritikin emphasizes aiming for "progress, not perfection."

TITLE: Getting Physical: How to Stick with Your Exercise Program.
AUTHOR: Turock, Art
PUBDATE: 1988
PUBLISHER: Doubleday.

The purpose of the book is to help people establish the lifetime exercise habit. It emphasizes the importance of recognizing how regular exercise is essential to creating a healthy, high-performance lifestyle everyone already wants and is interested in, and shows how to shift from an "interest in" exercising to "full-fledged commitment". The self-motivation skills of regular exercisers are presented as ones that can be learned and implemented by everyone. The book is also intended to help regular exercisers improve their performance by going beyond their present exercise programs.

The first of seven chapters identifies and discusses the common problem that exercisers have in maintaining an exercise program--motivation. For although "on again"/"off again" exercisers have an interest in and want to exercise, they lack the motivation necessary to carry out the program because of their self-limiting patterns of thinking. Listing ground rules for success, chapter two compares the difference between regular exercisers (who are committed to exercise) and others (who have an interest in and want to exercise). Infrequent exercisers identify circumstances as difficulties to exercising, weighing the benefits and difficulties and then deciding. In contrast, regular exercisers appreciate the benefits and take responsibility for their fitness. Chapter three points out myths concerning motivation and notes that no one exercises on impulse--that committed exercisers act on choice. Chapter four lists and discusses easy-way-out traps people use to make exercising a difficulty: immediate satisfaction, short-term goals, reasons/ excuses, and past failures; and then shows how to shift these perception traps of difficulty to commitment. Chapter five points out that the body is built to be exercised and lists many exercise benefits. Chapter six presents eight motivation training sessions to help the reader develop new mental habits to handle traps: visualizing, taking responsibility, formulating/creating a purpose, examining the risks of the exercise program, setting goals and monitoring progress, receiving support from others, preparing for weak moments, and making the workout fun. Chapter seven discusses and defines key principles for making breakthroughs, defining breakthroughs as "when you see exercise not as an activity to do when time is available, but as something essential to achieving overall success."

Chapters three through six include several question and writing activities for developing and practicing new mental attitudes and skills. For example, one activity focuses on prioritizing exercise benefits; another activity emphasizes identifying and monitoring short- and long-term goals. Blank exercise profiles forms are provided at the end of the book.

COMMENTS: This is an excellent book on motivation, clearly written and the concepts are easy to put in practice. Chapter six gives essential information and helpful guidance for identifying and writing down short- and long-term goals. Activities (which will not consume a great amount of time) will help you "personalize" an exercise program, so that you can become your own motivation trainer. The fine concepts, advice, principles, and skills can be transferred and used in any other area of life to produce results.

TITLE: Earl Mindell's New and Revised Vitamin Bible. How the Right Vitamins and Nutrient Supplements can Help Turn Your Life Around.
AUTHOR: Mindell, Earl
PUBDATE: 1985
PUBLISHER: Warner Books.

Comprehensive information is presented on using vitamins and minerals to achieve optimum health and to prevent disease. Twenty-three chapters describe how certain vitamins and minerals can foster healthy living, for example, by alleviating such things as stress, fatigue, and ailments, as well as by increasing endurance. The first four chapters include data on what vitamins are, how they work, and nutrients; sources of vitamins, synthetic vs. natural, chelation, storage, and when to take; and outline facts about 22 vitamins and 18 minerals (benefits, deficiencies, best sources, supplements, toxicity, destroyers, and personal advice). The next three chapters focus on three needed nutrients: protein (amino acids), fats, and carbohydrates (what they are, functions, amounts needed, etc.). Chapters eight through 11 discuss nature's wonder foods (such as yeast, ginseng, garlic, etc.); herbs and folk remedies; eating a balanced diet and discovering the vitamins you need, vitamin deficiencies and warning signs, retaining vitamin content; and reading labels. Remaining chapters report on individualized regimens of vitamins according to sex, age, habits, activity level, and occupations; supplements needed during special situations (such as going through the menopause or having broken bones, etc.); vitamins and minerals needed for getting well during specific illnesses and then staying well; the effect of vitamins on the mind; diet plans and minerals and vitamins needed while dieting; dangers of eating too much sugar and salt; vitamins and nutrition for looking good and retarding the aging process; cautions in regard to taking vitamins, including side effects; good nutrition for pets; and locating a nutritionally oriented doctor. Each chapter ends with questions often asked about the topic covered. A glossary, bibliography and recommended reading, and index are included.

COMMENTS: The concise book offers a wealth of solid information for the person contemplating taking vitamins. Well-indexed, this can also serve as a reference book regarding preventive medicine. It is a book for every health-minded individual.

TITLE: The Well Adult: The Complete Guide to Protecting and Improving Your Health.
AUTHORS: Samuels, Mike, M.D. and Samuels, Nancy
DATE: 1988
PUBLISHER: Summit Books, New York, NY

Providing up-to-date information for those adults (35-65 years) who are interested in maintaining good health and living longer, preventing diseases, and/or dealing with illnesses, the book tells how to control the factors which affect health. It is based on the philosophy that the key to good health is to consciously develop attitudes and choose practices that foster and improve health. The book presents research, discussions, summaries, and recommendations that support suggested lifestyle changes.

Arranged into two major parts, part one consists of seven chapters that focus on staying well and preventing diseases. The chapters cover topics that include the nature of health and illnesses, the two public health philosophies of health promotion and protection, and risk factors for major diseases that cause disability or death. Preventative medical principles presented include fostering positive health attitudes, controlling stress, and having a sense of fulfillment; practicing good nutrition and appropriate exercise; and controlling the impact of harmful chemicals on our bodies, including environmental hazards, as well as damaging chemicals we choose to take such as cigarettes, alcohol, and drugs.

Covering the common illnesses of mid-adulthood, part two advises how to deal with 100 of the most frequently occurring diseases and how to effectively cope with and improve their condition and prevent and lessen occurrences. Arrangement is under diseases of the skin, head, chest, musculo-skeletal, gastrointestinal, endocrine, genitourinary, and obesity. Common diseases covered range from poison ivy and oak to acne, common colds to migraines, cardiovascular diseases to lung cancer, bursitis to osteoporosis, diarrhea to ulcers, diabetes to thyroid disease, and urinary tract infections to prostate disease. The last section deals with emergency medicine. Each entry describes the disease, gives advice on self-care, discusses physiology and history of the illness, presents medical diagnosis information and treatments, tells how to rule out other diseases, and provides prevention information.

A bibliography and index are included.

COMMENTS: Numerous pictures of major art works illustrate text concepts in this well-organized, clearly-written, and easy to understand book on prevention. It contains many special features including a health risk assessment questionnaire to complete and send in for evaluation, and other self-screening tests; charts that provide immediate information--such as charts listing dangerous chemicals; summaries in stand out chart form for health improvement--for example, a personal plan to prevent cancer; and good sections on the nature of health and illnesses and the body/mind connection of good health. Information is included that tells how healthy people can use the book, which chapters to read, and steps to take for improving health, as well as how those with an illness can use the book. Read the book, put the advice into practice, and keep it handy for reference.

TITLE: Natural Health, Natural Medicine
AUTHOR: Weil, Andrew, M.D.
PUBLISHER: Houghton Mifflin Company, Boston
PUB DATE: 1990

Natural methods for wellness and self-care are presented that were developed through years of research, practice, and teaching. Prevention oriented, it teaches how to mobilize the body's own healing mechanisms and how to take more responsibility for health.

The book is organized in four major parts. Focusing on preventive maintenance, part I tells how to design a healthy lifestyle. It offers advice on how to: design, implement, and maintain sound nutritional eating and drinking habits; breathe properly; exercise when you dislike it; relax, rest, and sleep; and kick addictive habits. The last section discusses wholeness and connectedness of health.

Part II lists, discusses, and recommends specific prevention techniques for reducing the risk of heart attack, stroke, cancer, and ends with advice on how to protect your immune system. This part discusses specific risk factors associated with the diseases and offers formulas to avoid getting them. (For example, a special antioxidant formula to use for cancer prevention is presented.)

Part III covers basic natural treatments for self-care, describing ways to help the body heal itself. The section on vitamins and supplements critically assesses and explains the common categories found in health food stores. Vitamin and supplement information includes what each is, what it does, for whom it is useful, how much is safe, and its protective effects. Another section on herbal remedies informs which ones to avoid, presents herbal medicines and their uses, describes what form to buy, how to use each, and what it is made from.

Part IV consists of home remedies for common ailments. Recommendations for managing common conditions by natural methods, including dietary adjustment, use of vitamins, supplements, herbal remedies, and other measures. Entries are in alphabetical order, beginning with acne and allergy, including such conditions as autoimmunity disease, back pain, fibrocystic breast disease, impotence, prostate trouble, sinus problems, and ending with uterine fibroids and vaginal yeast infections.

Appendix A tells how to find practitioners in holistic, osteopathic, homeopathic, naturopathic, and Chinese medicine, as well as other practitioners (for instance, rolfing). Appendix B lists addresses and telephone numbers of suppliers or organic produce, vitamins and supplements, vitamin C, freeze-dried herbal extracts, herbal pharmaceutical products, and Chinese medicinal herbs. The book is indexed.

Comments: Well-organized and easy to read, the book contains a wealth of excellent, up-to-date, sound information for those who want to design and practice a healthy lifestyle. The author clarifies many common questions people have on fat, fiber, cholesterol, food additives, pesticide residues, cooking methods, supplements, and herbs. Weil's wholistic approach emphasizes that meaningful connections beyond the ego need to be made for optimal health. For those interested in controlling their health, this book is a must!

TITLE: Shape Magazine Special Weight Loss Section. (pages 79-183)
DATE: March, 1988
PUBLISHER: Shape Magazine, Inc., 21100 Erwin St., Woodland Hills, CA. 91367

The special issue, which comprises over half of this magazine, offers guidelines, tips, steps, and information for losing weight. Approximately 20 articles written by medical, psychology, and exercise specialists focus on employing exercise and sound nutrition as the means for weight loss. The first article, written by an overweight, abused and battered wife, reveals how the author lost weight and gained control over her life. Other articles include steps to take for lowering your physical and psychological set points; a 12-week, step-by-step exercise program for the overweight; a six-step take charge of your life and health program; ways to keep a record of your eating and exercise habits, ideas for involving a partner in your exercise/diet program to help you lose weight; Valerie Bertinelli's weight workout; how to know when you are full and information on which foods are filling; tips to help you lose weight; how to visualize yourself fit; reviews of the best and worst diets; a user-friendly weight loss plan in which you can eat more and lose more; a quiz on cholesterol by Kenneth H. Cooper; and healthful snacking and a snacker's guide to the fat content of snack-type food. The last article discusses college weight gain and how to avoid it.

COMMENTS: Shape magazine publishes a special weight-loss section annually in March. The issue abstracted above contains good information for those wanting to lose weight the healthy way. The 12-week program is concise (only 6 pages long) and well-written by someone who was formerly overweight. It contains enough information for healthy weight loss. The section includes tips valuable to all, such as the knowledge on cholesterol and fat content of snacks. (See p. 190 for availability information.)

TITLE: Minding the Body, Mending the Mind.
AUTHOR: Borysenko, Joan, Ph.D.
PUBDATE: 1987
PUBLISHER: Bantam

Based on the content taught at the Mind/Body clinic at New England Deaconess Hospital, the guide to stress reduction shows how to control the mind in a way to maximize health and how to take an active role in healing ourselves. Information, ideas, techniques, and physical and mental exercises are presented to help readers: understand the interaction of the mind and body in the healing process; alleviate everyday stress, as well as stress-related diseases; cultivate relaxation and mindfulness; take control of physical and emotional well-being; and transform their lives.

The book is arranged into eight chapters. Chapter one, the Science of Healing, presents scientific background material on mind/body interactions showing how faith, belief, and imagination heal. Chapters two and three--Getting Back in Control and Breaking the Anxiety Cycle--provide the foundation for building the skills of awareness and control of the body through relaxation techniques to still the mind. Chapter four, Mindfulness and the Discovery of the Self, teaches fundamental skills for living in the present (rather than past or future) by practicing concentration and breathing exercises. Chapters five and six, Mind Traps and Reframing and Creative Imagination, provide tools for observing the mind in order to be in the present and cutting through conditioning of the past that leads to stress and physical illness. The reader is taught how to become aware of mind habits that physiologically effect the body and to reframe stress so that it becomes a challenge. Chapter 7, Healing the Emotions, deals with learning from emotions and practicing present-centered awareness and forgiveness in daily life to gain peace of mind. Chapter 8, Sam's Story, presents a true drama of a patient with aids whose mind and spirit overcomes death.

Appendices provide a summary of 12 significant reminders of book content, a self-assessment for measuring physical and emotional well-being, and presents lists of additional reading suggestions. An index concludes the book.

COMMENTS: A wonderful book everyone should read to help them reduce stress.

RECOMMENDED MAGAZINES

Three general magazines I suggest scanning or subscribing to include American Health, Prevention, and Shape. Their content, coverage, and emphasis are each quite different. In addition to these three, there are many good magazines and newsletters focusing on health and prevention. Also, check out any journals in the particular activity or sport you have chosen. For example, if you chose swimming, cycling, running, or yoga, you will find journals that offer techniques and tips relevant to excelling in the activity. It keeps your interest up, gives you new techniques, helps you feel a part of a larger movement, and motivates you to continue the activity.

AMERICAN HEALTH: Fitness of Body and Mind

The scope/coverage of American Health is broad-based--encompassing physical, mental, emotional, social, and environmental aspects of health. Articles deal with quality of life issues, not just medical concerns. According to the editor, health is viewed as a starting point for the good life and not as an end in itself.

Articles, written by experts in the health field, include topics on exercise, good nutrition, medical concerns, and emotional and social issues. Sample topics are: exercise adherence, different ways to exercise, mind/body exercise connection, light cooking, calcium, heart health, viruses, cholesterol, divorce and family, body image, roles of men, and worry. Gallup surveys are often reported on a number of health concerns.

Each issue reports on medical news, skin and hair, exercise wear, fitness, walking, teeth, mind/body news, family reports, pets, and nutrition. Also provided are recipes, letters from readers, and a column by the editor.

Comments: American Health offers a sensible approach to wholistic health, portraying health as a part of everything we do and viewing learning about health as an ongoing process. Published 10 times a year by RD Publications, Inc., 80 Fifth Avenue, NY 10011

PREVENTION

Prevention has advocated practicing healthy habits for 40 years! The name reflects the intent of the monthly magazine--to give information and advice to readers that will increase their knowledge of current developments in health. This knowledge will help them lower their risk of disease, or slow, stop, and break up illnesses, and assume responsibility for adopting possible lifestyle changes that will result in improved health and well being. The underlying philosophy is that each person can do the most to improve his/her health.

Practical advice is relayed from the world's leading health experts in articles on such subjects as: vitamins, minerals, and food supplements for better health; use of the mind to heal the body; sex; happiness and well-being; patient/doctor relationships and concerns; active healthy lifestyles;

exercise; new medical knowledge; improved appearance; stress control; feel better; longevity; weight control; nutrition; disease prevention and control; self-care; and cures and solutions to health problems.

Each issue contains a number of lead articles written by the world's health experts which give readers tips, techniques on healthy life practices, contain how tos, and present straight-forward information. In addition to numerous articles, typical departments include information on Prevention's Walking Club (see pp. 106-108), brief reports of medical research news and feel better tips, letters from readers, monthly planning tips, editor's columns; research bulletins on food nutrition and science, and recipes.

Comments: I am grateful for all the fine advice and information I've gotten from Prevention over the years. The publication takes a wholistic approach, providing information and tools to help readers to achieve high level wellness. The magazine, years ahead of the medical field in prevention foresight, continues to be a leading edge health magazine.

SHAPE

This magazine offers practical, how to articles written by fitness/health professionals on reshaping your body, improving your diet, and protecting your health. Coverage focuses on exercise/sports, nutrition/weight control, mind/body health, and beauty/fashion/travel.

In the area of exercise and sports, there are "how-tos" on many different workouts. The text is generously accompanied by pictures and illustrations. For example, topics include spot training, sports medicine, and correct ways to exercise. Under the subject of nutrition and weight control are recipes for light cooking, how tos for eating smart, supermarket savvy, fat facts, and successful makeover weight loss stories. Mind/body and health articles and columns include advice from Betty Weider, medical care for women on health issues, and health tips for working women. Beauty/fashion/travel provide brief articles on techniques to revitalize your body/mind, ways to improve your image with makeup and fashion, skin care tips, and travel suggestions. In every issue are the publisher's page, reader letters, and brief reports on what's new in nutrition, exercise, health, and fitness. Yearly coverage includes articles on weight loss/control, evaluations of exercise videos and shoes, and guides to spas.

Comments: Shape's focus is more concerned with the physical, i.e., body shape and image, than the other two magazines. It offers great techniques with good explanations and illustrations for improving body shape.

NEWSLETTERS

Three good newsletters that offer information on wellness and prevention are listed below. Write for a sample copy.

"Consumer Reports Health Letter" (Box TTB, 256 Washington St., Mount Vernon, NY 10553; $24)

"Harvard Health Letter" (164 Longwood Ave., Boston, MA 02113; $24)

"The Wellness Letter" (University of California, Berkeley, 48 Shattuck Sq., Suite 43-C, Berkeley, CA 94704; $20)

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Exercise and good nutrition provide the foundation for healthy skin and hair. Aerobic exercise makes the skin glow because it forces blood to the skin, increasing the delivery of nutrients and oxygen carried by the blood. Yet there are a few extra appearance enhancers.

One of the best things I have discovered for the face is Retin-A (tretinolin) cream. (Retin-A is derived from vitamin A.) It is said that Retin-A reverses sun damage to the skin; eliminates minor lines and wrinkles; thins the upper layer of skin, helping blemishes, blackheads, and lifeless skin to shed; makes pores appear smaller; improves circulation in the skin which stimulates cellular growth, promoting the formulation of new cells. Since I began using Retin-A, my skin holds moisture much better, acts and looks like younger skin, and has faded some brown spots. While some people have reactions to Retin-A (swelling, dryness, peeling, stinging, reddening), I did not and believe that it was because I gradually accustomed my skin. When I began apply-ing it on my face at night, I mixed it with half moisturizer, and gradually decreased the amount of moisturizer over the first several months, until my skin could tolerate it alone. Retin-A, a prescription drug, must be used under the direction of a dermatologist.

There is no universal prescription for this drug. It is up the doctor to determine correct dosage. The dermatologist advised me to wash my face with a mild soap, wait for it to completely dry for 20 minutes, and then apply a pea-sized amount of Retin-A to the face. I used it once a week the first week, twice the second week, and added one day each week until, after seven weeks, I applied it every night. When using Retin-A, it is important to avoid prolonged or excessive exposure to direct or artificial sunlight. A Paba-free SPF 15 or higher sunscreen should also be used. I also apply a moisturizer over the sunscreen. Whether or not you decide to use Retin-A, always use a sunscreen to protect your skin.

Less irritating derivatives of Retin-A, some of which are time-released, which do not have or minimize Retin-A's side effects are being developed. Also, moisturizers (many of which have sunscreen added) to use along with Retin-A to offset drawbacks, are coming on the market. Some of these are: Catrix correction cream (800-526-3461); Resource, a skincare line that sends samples and a list of stores carrying their product (800-232-7588); Purpose, a cream by Johnson and Johnson available at pharmacies and stores; and Rejuvenage developed by Dr. Klingman, the inventor of Retin-A. New products are continually being developed. Your dermatologist will be on top of this knowledge.

A book that provides good information and guidance for using Retin-A is Blue Eyeshadow Should Still Be Illegal: The World After Retin-A, Paula Begoun, Beginning Press, 1988. It also has information on total skin care and buying and using cosmetics.

A daily skin tonic is 4-8 ounces of fresh carrot juice. It needs to be made fresh daily or vitamin A is lost. Spas regularly serve foods with betacarotene (vitamin A) which helps the skin replenish itself.

In regard to hair, if it is fine, I find that drinking a package of unflavored gelatin mixed with water an hour before breakfast has made my hair appear thicker and seems to increase the diameter of individual hair strands. I also massage the scalp for about five minutes each day, improving the circulation. Porter Schimer offers a hair

"tonic" shake for growing thick, healthy hair, consisting of fruit, wheat germ, yogurt, yeast, and other ingredients. (See Fitness Through Pleasure: A Guide to Superior Health for People Who Like to Have a Good Time, Rodale Press, 1982, p.227.)

Black currant oil (a good source of gamma-linolenic acid (GLA) promotes the growth of skin, hair, and nails. For dry hair, Dr. Weil recommends taking 500 milligrams twice a day and notes that it takes 6-8 weeks before any change is apparent. (Weil, Andrew, Natural Health, Natural Medicine. Houghton Mifflin, 1990, p. 227.

Many health/beauty books are available today. One that takes a wholistic approach is Rejuvenation by Horst Rechelbacher, the founder of the Aveda Corporation--manufacturer of natural hair, skin, body care, and environmental products. The guide to health and beauty addresses inner and outer harmony in life; longevity; physical and mental cleansing rituals; advanced nutrition; physical exercise in the form of yoga; skin care and natural and synthetic cosmetics; relaxation exercises; massage; time management; and instinctual drives. Rejuvenation: A Wellness Guide for Women and Men. Rechelbacher, Horst. (Thorsons Publishers, Inc., 1987.)

GLOSSARY

GLOSSARY

Additives --chemical substances added to food to improve nutritional quality or preserve the food; they can include vitamins and minerals, preservatives, stabilizers, and other elements.

Aerobic--in the presence of oxygen.

Aerobic exercise/aerobics--physical endurance activities engaging the use of large muscle groups over an extended period of time (jogging, biking, etc.) that increase your body's need for oxygen, thereby placing demands on your cardiovascular system to more efficiently extract oxygen from the air, transport it through your body, and use it for energy.

Aerobic fitness--ability to take in oxygen from the air, transport it through your body, and use it as energy. Fitness of the heart and circulatory system; i.e., cardiorespiratory fitness.

Anaerobic exercise--high intensity activities of short duration (such as sprinting) that surpass the body's ability to supply oxygen to the working muscles for a sustained length of time. Anaerobic exercise means without oxygen.

Antioxidants--certain nutrients (such as vitamins beta-carotene, B6, C, E, and minerals selenium and zinc) that help prevent and slow down cell deterioration by blocking oxidation.

Atherosclerosis--an ailment of the lining of blood vessels caused by the accumulation of plaque (cholesterol, fat, and calcium deposits). The build up of plaque results in thickening, hardening, and narrowing of the arteries, lessening circulation.

Basal metabolic rate (BMR)--the minimum amount of energy expenditure required while a person is in a resting or inactive state.

Blood pooling--the settling (pooling) of blood, after exercising, in the lower extremities. If this blood is not pumped back into the circulatory system, the exerciser could become dizzy or lose consciousness. These reactions are avoidable when a cool down follows aerobic exercise. (See cool down.)

Body composition--proportion of body fat weight to lean body weight.

Calorie--the amount of heat needed to raise the temperature of one gram of water one degree centigrade. Calories are used to measure the energy value of food intake and expenditure.

Carbohydrates--a compound composed of carbon, hydrogen, and oxygen, which as a sugar (simple carbohydrate) or starch (complex carbohydrate) is the main source of energy for all body functions.

Cardiorespiratory endurance (synonymous with aerobic fitness).

Cardiovascular health--heart and blood vessels are free from disease or abnormal condition.

Cholesterol--"fat like" substance found in animal fats, oils, and humans. Excess cholesterol is often deposited as plaque in the arteries thereby narrowing them, increasing the risk of heart disease.

Circuit training--aerobic intervals interspersed, in the same workout, with strength work.

Cool down--gradually decreasing the intensity of exercise activities to bring down the heart rate, breathing, and circulation to pre-exercise level.

Cross training--a balanced physical exercise program that incorporates several varied, complementary activities that engage upper and lower body muscles. (For example, a training program of cycling, swimming, and running).

Cruciferous vegetables--vegetables that have large amounts of vitamins A and C, fiber, and appear to have anticancer properties; i.e., cabbage, broccoli, cauliflower, and brussels sprouts.

Degenerative disease--disease caused by deterioration of tissues or organs due to life style abuse.

Electrolyte solution--a solution, typically water, with electrolytes (dissolved minerals) necessary for the body to conduct electric current in order to use energy.

Endorphins--chemicals (amino acids, produced in the pituitary gland) that calm the nervous system and reduce pain. Aerobic exercise stimulates endorphin production which helps reduce stress and anxiety, and produces a tranquilizing sense of well being.

Exercise--any form of physical exercise activity (synonymous with workout in this book).

FIT formula--aerobic exercise recommendations for frequency (how often), intensity (how hard) and time (how long).

Flexibility--ability of a joint or group of joints to move through the full range of motion.

Free radicals--molecules containing an extra, unpaired electron, which can cause cell and tissue damage (and lead to cancer). Common causes of free radicals are (1) oxidation of polyunsaturated fats within the body and (2) high-energy radiation from the environment. (Derived from Dreher, p.19.)

HealthMark (HM)--a wholistic health program created by Dr. Mark Glesser (see appendix). HM is a logo to help people choose groceries or restaurant meals containing 30% or less fat and approved by the HM program.

Heart rate--the number of heart contractions (beats) per minute.

High density lipoprotein (HDL)--a protein in the blood (with more protein and less cholesterol) which carries cholesterol and other fats out of the blood to the tissues, thereby retarding build up on artery walls.

High level wellness (HLW)--involves five health dimensions: good emotional health (you cope with

stress, give love, and ask for what you need); social health (you have a good support system of family and friends); mental health (you are open to new ideas, challenge yourself); spiritual health (you have a purpose and your life has meaning) and physical health (you are free from disease and have energy to pursue life tasks and goals).

Hydrogenation--adding hydrogen to food substances, such as vegetable oils, and making them more solid. The process of hydrogenation makes oils artificially saturated for commercial purposes.

Hypertension/High blood pressure--in excess of normal range of blood pressure (120 systolic/80 diastolic). 140/90 is considered high.

Intensity (of exercise)--the degree of energy required for an exercise activity; i.e., how hard to work out.

Interleukins--a virus-fighting type of white blood cell (T cell) of the immune system.

Interval training--a training method that alternates aerobic and anaerobic exercises within the same workout.

Isokinetic--muscle contraction performed at a constant speed; the tension developed by the muscle is maximal over the full range of joint muscle.

Isometric--muscle contraction without a change in length of muscle.

Isotonic--muscle contraction that involves movement in which the muscle shortens and lengthens.

Karvonen formula--a method for measuring target heart rate which takes the resting heart rate into account. It is considered a precise way to determine the exercising heart rate for safely promoting aerobic training.

Lean body weight--total body weight minus the body fat weight. Lean body weight consists of skeletal muscle mass.

Linoleic acid/vitamin F--an essential fatty acid needed for normal human nutrition.

Lipoprotein--a combination of a lipid (fat) and a protein.

Low density cholesterol (LDL)-- a cluster of lipids (fats) surrounded by protein in the blood that accumulates as plaque on the walls of blood vessels, clogging blood vessels and thereby blocking the flow of blood. The LDL lipid-protein complex contains less protein and more cholesterol than does HDL. Having high levels of LDL is a major risk factor.

Maximum heart rate (MHR)--assumed maximum number of heart beats per minute that your heart can beat for your age.

Maximal oxygen uptake (VO2 max)--"The point at which oxygen consumption plateaus and shows no further increase (or increases only slightly) with an additional work load." (McArdle p. 108.)

Metabolic rate--the rate at which calories are burned for daily living.

Minerals--inorganic substances, occurring in foods, that help regulate body functions.

Metabolism--physical and chemical processes by which the body systematically breaks down and converts food to a usable form of energy and expends the energy to maintain life.

Monosaturated fat--fat having less saturation than other fats (two hydrogen atoms short of saturation). It is liquid at room temperature, and is of plant origin.

Muscle balance--when a muscle or muscle group on both sides of a joint is equally strong.

Muscle endurance--the ability of a muscle to exert force against a light load over an extended period of time; i.e., ability to exercise for long durations.

Muscle imbalance--when a muscle or muscle group on one side of a joint is strong, while the muscle or group on the other side is weak.

Muscle strength--ability of a muscle to exert maximum force against resistance; i.e., ability to lift a heavy object.

Musculoskeletal system--all of the muscles, bones, joints, ligaments, tendons, and connective tissues responsible for movement of the body.

Natural foods--foods with no artificial additives or preservatives.

Nonfat--food products in which all fat has been removed.

Obesity--the storage of excess amounts of body fat. Women are considered obese when their body fat is 33%; men 24%.

Organic foods--foods grown without chemical or artificially derived elements.

Overload principle--to elicit a training effect, the placing of greater than (an individual's) normal exercise demands on the body, which then adapts to that load resulting in increased muscle strength, endurance, or aerobic function.

Perceived exertion scale--a scale developed by Borg to rate exercise intensity. The scale is based subjectively on how hard you feel you are working and on your ability to breathe and talk during exercise.

Physical fitness--the ability to carry out daily tasks with sufficient vigor and energy without tiring and feeling stress, and with a feeling of optimum mental abilities. Assessment of physical fitness is made by measuring cardiovascular endurance, muscle strength and endurance, flexibility, and body composition.

Polyunsaturated fat--a fat having unfilled carbon bonds, which tends to be liquid at room temperature, and is of plant origin.

Pre-aerobic (conditioning program)--lower intensity exercise program designed to prepare sedentary people for regular aerobic exercise.

Proprioceptive neuromuscular stretches (PNF)--hold/relax method. A method in which you first contract a muscle isometrically and then move it to a further range while it is relaxed.

Protein--a compound made up of amino acids, which are the main constituents of cells.

Pulse rate--artery expansion which reflects the beat of the heart.

Recommended daily dietary allowance (RDA's)--government guidelines for the estimated minimum amount of daily food intake that will meet nutritional needs (help prevent nutritional deficiency) in average healthy persons.

Reversibility principle--a conditioning principle whereby when you stop exercising regularly, you lose the physiological gains you have previously made in exercise.

Risk factors--physiological behavioral characteristics, signs, or symptoms that predispose a person to potential health problems, disease, or to premature death due to heart disease.

Saturated fat--a fat that cannot absorb any more hydrogen, is solid at room temperature, and is usually of animal origin.

Specificity principle--a fitness training principle in which an exercise activity stresses specific muscles and body systems that will be beneficial to that particular activity. "Specific exercise elicits specific adaptations creating specific training effects." (McArdle, p. 349.)

Target heart rate (THR)--a method (based on an age related formula) to determine the exercising heart rate which will promote the best aerobic training effect.

Vitamins--organic compounds occurring in foods that are necessary for normal metabolic functions.

Warm up--exercise designed to prepare the cardiovascular system and muscles for aerobic exercise that follows.

Weight training--exercise using weight for resistance, including free weights or weights on machines.

Whole foods--foods that have little or no processing.

Workout--any form of physical exercise (synonymous with exercise in this book).

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Sydney Meredith has been a Conditioning, Fitness, and Aerobics instructor for over 12 years in one of the nation's leading fitness communities. She has also taught flexibility, balance, and strength for the past 4 years. Sydney is certified by the International Dance and Exercise Association (IDEA) and American Fitness and Aerobics Association (AFAA). She is a former associate director of a national research information and retrieval center for social studies and social sciences, and holds a B.A. from a major research university.

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